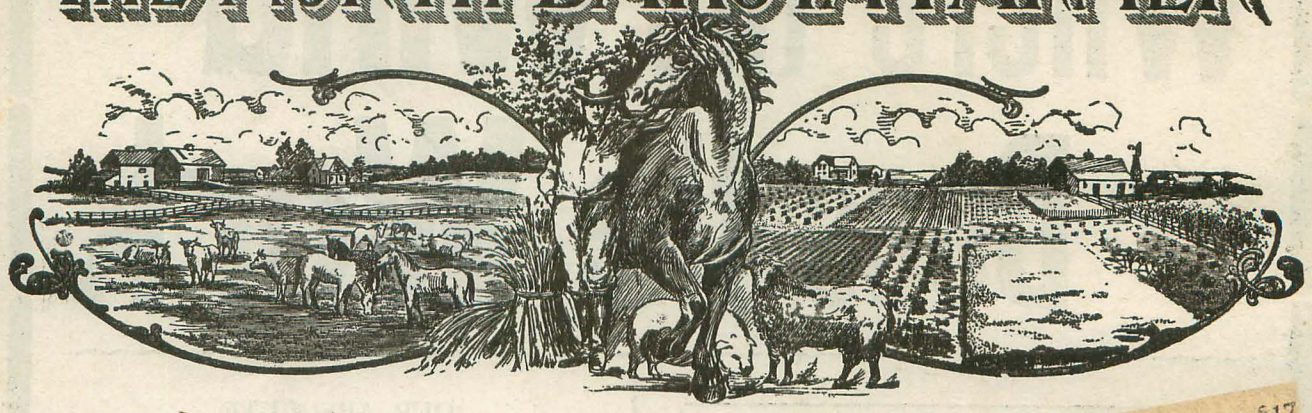
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Vol. 17, No. 5 Lisbon, North Dakota, November 15, 1915 50 Cents A Year

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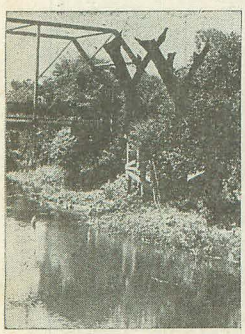
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THE NORTH DAKOTA FARMER

Vol. 17, No. 5 LISBON N. D., NOVEMBER 15, 1915 50 Cents a Year

Let Us Be Appreciative

By John H. Worst, Pres. N. D. A. C.



ELL CAN WE North Dakotans afford for once to appreciate many things which we heretofore have accepted as matters of course. Too often, even wise people underestimate the thing they should be most proud of.

It is a question, if the farmers of this commonwealth fully appreciate the natural resources which the state offers for the production of wealth, and which are theirs to transmit unimpaired to their children. Moreover, the cities and villages with their varied lines of business and professional men scarcely realize how much their prosperity depends upon the natural fertility of North Dakota soil.

True, there are some things about the climate and meteorological conditions of our state that seem to offer license for complaining, for finding fault. But this is largely because the things complained of are not understood. Chief among the things complained of is limited precipitation. Our crops do occasionally suffer for want of available moisture during the growing season. The fault, however, is not with the climate. The blame rests with a faulty system of farm management. In the first place, the average farmer attempts to seed about twice as much land as he is properly equipped to cultivate. More than half the moisture resulting from snow and rain is on that account permitted to escape by evaporation, most of which could have been conserved by a proper system of conservation. Another large part of the moisture is sucked out of the soil by a large variety of weeds, which should not be permitted to thrive at the expense of the crops. Because of the wind, the sun and the weeds, sufficient moisture is coaxed or stolen from the soil to cause droughts, but Dame Nature should not be blamed for this; the fault lies with shallow plowing and insufficient cultivation. It is time that we appreciate this fact—but not the cause.

Another thing we should appreciate. The Creator evidently provided just enough moisture precipitation for North Dakota to insure bumper crops every year for those who farm scientifically, and yet did not provide sufficient humidity to enable unpatriotic men to exploit the land unnecessarily nor to permit excessive downpours to leach out and wash away the most available fertility in the "run off." That is why our soil is so wonderfully fertile. Excessive humidity wastes more plant food than the crops consume. Instead of grumbling about limited precipitation, therefore, we should be very thankful. The foresight and benevolence of the Creator is thus signally manifested in the natural order of things—for those who employ their energies in harmony with natural laws.

Another criticism is aimed at our long winters. Well, they are long and sometimes severe, but they are exactly adapted to the needs of a country where the precipitation is not excessive. Evaporation is arrested during that period when crops are not growing, which results in our ability to grow a pound of dry vegetable matter here with from a third to a half the weight of water required in countries where the winters are mild but disagreeable and sloppy. The precipitation and the winters complement each other so perfectly that we should not only appreciate the fact, but be exceedingly thankful to Almighty God for the wisdom displayed in making for North Dakota, soil, climate and everything else so perfectly adaptable to great ends.

There are many, many other things we should appreciate more fully than we do, which time and experience will more surely bring to our attention.

One additional item may be mentioned. Our state is made up of citizens of many nationalities. This mixing of the most virile bloods of so many races will insure a future population for our state that for pep, character and lofty purpose should outrank the world. Why not?

With the most fertile soil the sun shines upon in his daily rounds; with sufficient percipitation to insure good crops where good farming is practiced and failures for incompetents; with good long winters for rest, recreation and moisture conservation, and yet severe enough to eliminate the weaklings; and with the foundation human stock for an honest, sturdy and most vigorous race of men and women—who does not appreciate these things and thank God that he is alive and a citizen of this commonwealth?

NORTH DAKOTA LEADS



N crop condition on September 1st and October 1st North Dakota leads all the states.

This is the report that has been authorized by the United States Department of Agriculture, Crop Estimate Bureau. On September 1st, North Dakota's crop condition was 126.5 or 26½ per cent above the average. South Dakota stood next with 122.1, while for the U. S. it was 105.5. On October 1st North Dakota had gained 12.4 points, bringing it up to 138.9, while the average for the entire United States was 106.9 % of a ten year average.

The October estimate on the yield of wheat is 142,782,000 bushesls for North Dakota in 1915, as against 81,-592,000 last year, or an increase of 76 per cent. The price on October 1st is 2.6 lower than a year ago.

The 1915 oats crop is 92,500,000 bushels against 81,592,000 bushels in 1914. The 1915 barley production is placed at 42,000,000 bushels while last year it was 28,275,000. This year's potato crop is placed at 7,370,000 bushels while in 1914 it was 7,630,000. The production of flax seed is 7,-720,000 bushels against last year's crop of 6,972,000. Corn is the only crop that shows much dropping off. The 1914 yield was 14,000,000 bushels while the 1915 crop is 7,800,000 bushels.

North Dakota has produced 42 per cent of all the spring wheat raised in the United States in 1915 and 44 per cent of the flax. No other two states have equaled North Dakota's yields of either spring wheat or flax.

THE FATHER OF HIS COUNTRY WAS A TWENTIETH CENTURY FARMER

Extract from George Washington—Farmer, by Paul Leland Haworth

In Colonial days and the early years of the Republic most people of consequence lived in the country, and, just as in the England of that time, it was the landowner who was bowed and scraped to and who held most high positions of public trust. With the coming of the Industrial Revolution a movement to the cities set in; country life fell into disrepute; and farmers not only became the butts of cheap humor as "clodhoppers" and "hayseeds" but they forgot how to make the most of their surroundings and began to lead a dreary, colorless existence.

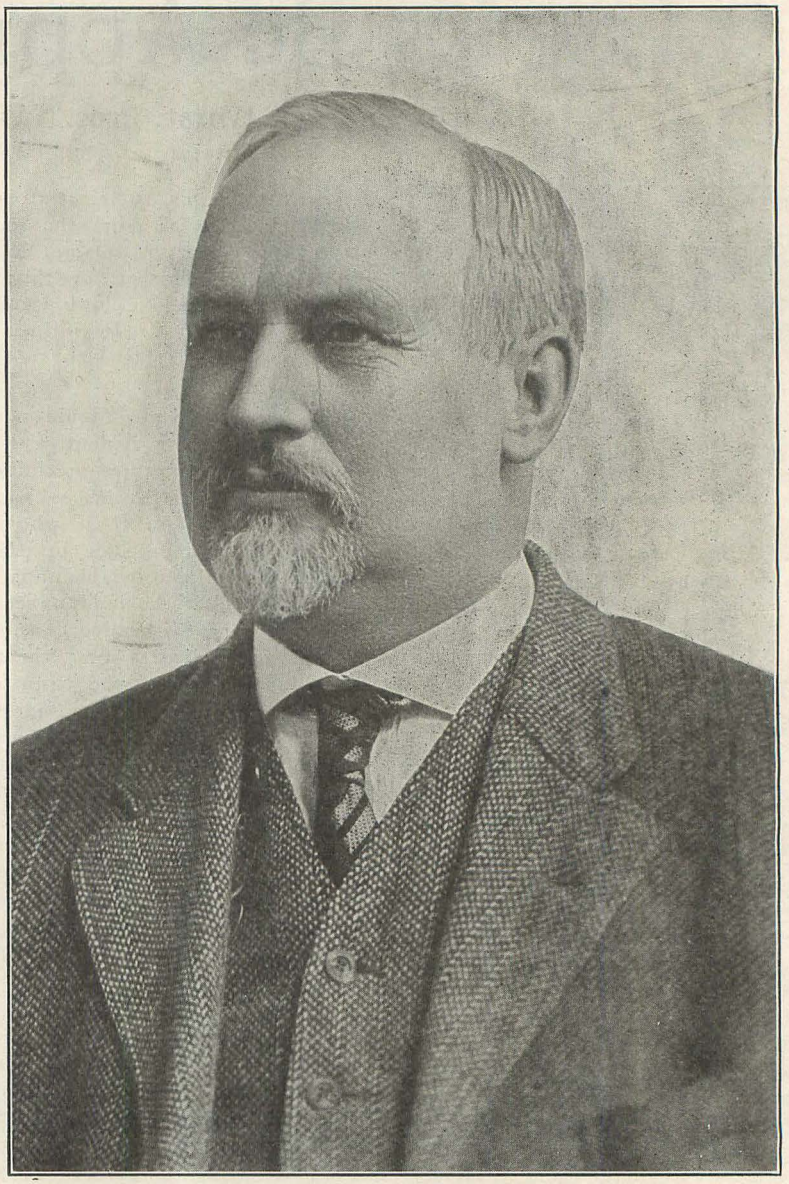
In recent years the pendulum shows a tendency to swing the other way, for people are again realizing the truth of the old adage that God made the country and man the town and that the country is the only place in which to lead a normal human existence. We are on the eve of a revolution in rural affairs, and farmers are awakening to the discovery that theirs is an occupation that not only offers a wide field for scientific study and management but also to the fact that if they will only make the most of their opportunities for enjoyment theirs is the most enviable lot of all mankind.

George Washington had awakened to these possibilities long ago, and at Mount Vernon more than a century ago was not only applying brain power to agriculture but was having a splendid lot of fun and enjoyment into the bargain.

Dr. Paul Leland Haworth has made a careful investigation of this phase of Washington's career, and in his new book, George Washington—Farmer, has brought to light many hitherto unknown facts regarding the home life and agricultural activities of the man who was "first in war, first in peace, and first in the hearts of his countrymen." The book is the more notable because Dr. Haworth is not only a trained historian thoroly conversant with the period in which Washington lived but he is also himself a dweller in the country and knows at first hand the life of the farmer.

He finds that Washington was one of the great scientific farmers in America, that he was one of the first to conserve the soil, that he performed hundreds of interesting agricultural experiments, that he made farming machinery with his own hands, that he was a pioneer in improving the breeds of stock, that he was the first American to raise mules, that he owned over sixty thousand acres of land and died the richest citizen of the Republic.

"Nor was he the type of farmer—of whom we have too many—content to vegetate like a lower organism, making scarcely more mental effort than one of his own potatoes, parsnips or pumpkins. He was one of the first American experimental agriculturists, always alert for better methods, willing to take any amount of pains to find the best fertilizer, the best way to avoid plant diseases, the best methods of cultivation, and he once declared that



Prof. E. F. Ladd, Editor of the North Dakota Farmer, whose firm stand for pure food, just weights and sanitary conditions has given him a state-wide and even national reputation.

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he had little patience with those content to tread the ruts their fathers trod. If he were alive today, we may be sure that he would be an active worker in farmers' institutes, an eager visitor to agricultural colleges, a reader of scientific reports and an enthusiastic promoter of anything tending to better American farming and farm life."

In the pages of this book we see the Father of His Country as a living, breathing human being and not as a marble statue on a pedestal. We see him keep open house at Mount Vernon, with company *always* present at his hospitable board; with him we hunt the fox over the green fields and Valley of Virginia, shoot buffalo in the Savannahs along the Great Kanawha, locate rich bottom lands in the savage Wilderness beyond the Alleghanies; watch him build a "barrel plow" or corn drill; laugh over his amusing experiences with would-be borrowers; smile at his anxiety for rain in time of drought and over his worries with fly and chinch bugs; ride out with him over his estate each morning and watch him work in his experimental plots and give admonitions and advice to the overseers of his many black servants; share with him his succeeding hobbies for horses, hounds and mules.

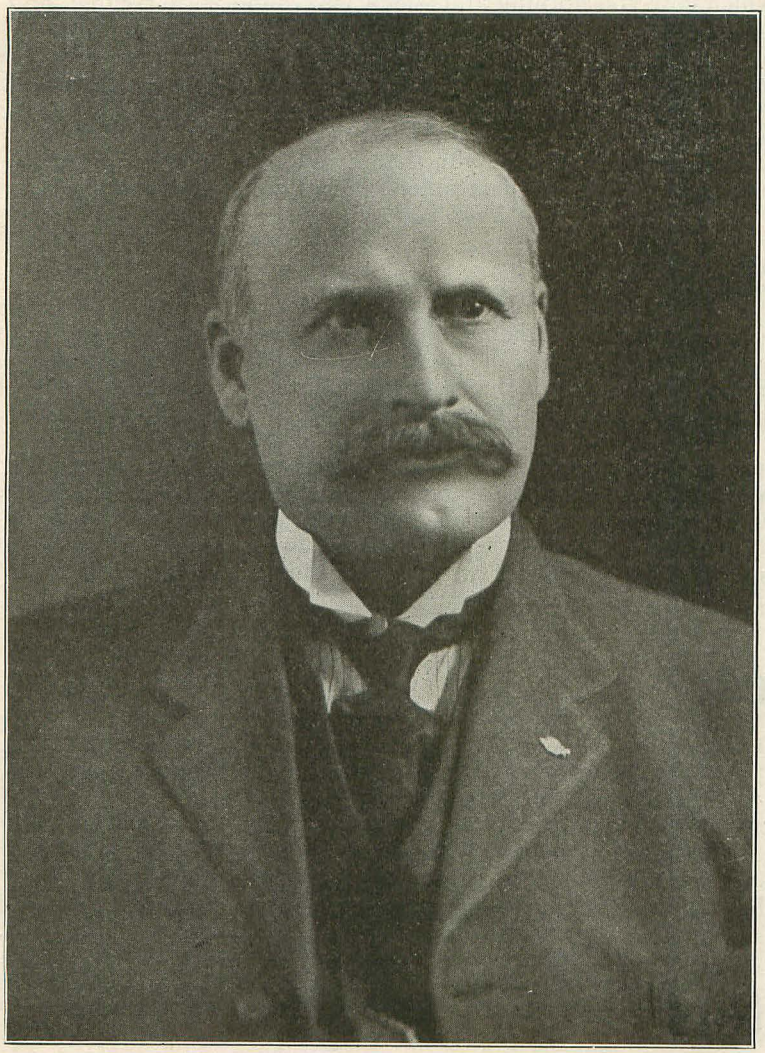
The story of his experiments in mule-raising is of itself one of great interest. From the King of Spain and Lafayette he received some jennets and two jacks, the last of which were grandiloquently christened by the negro groom Peter, "Royal Gift" and "The Knight of Malta." "Henceforward," says the author, "the peaceful quiet of Mount Vernon was broken many times a day by sounds which, if not musical or melifluous, were at least jubilant and joyous. Evidently the sound in no way disturbed the General, for in 1788 we find him describing the acquisitions in enthusiastic terms to Arthur Young, the English agriculturist. He called the mules 'a very excellent race of animals. . . . Indeed in a few years, I intend to drive no other in my carriage.'

"Ah, friend George, what would the world not give to see thee and thy wife Martha driving in the Mount Vernon coach down Pennsylvania Avenue behind four such long-eared beasts!"

But, as the thousands who have visited Mount Vernon know, Washington was not concerned wholly with things of mere utility. He wanted his estate to look well, and once wrote: "I shall begrudge no reasonable expense that will contribute to the improvement and neatness of my farms, for nothing pleases me better than to see them in good order, and everything trim, handsome and thriving about them; and nothing hurts me more than to find them otherwise." He had a sense of beauty, and it is only recently that many of his countrymen, absorbed in material undertakings, have begun to appreciate the things he was enjoying so long ago. He turned landscape gardener, and in the chapter called "The Horticulturist" the story of how he rebuilt and improved Mount Vernon is told in full, the results, as they appear today, being illustrated with photographs.

In utilitarian matters nothing was too small to receive his earnest and careful attention. After he had become one of the most famous men in the world he painstakingly counted and calculated the number of seeds in a bushel of clover, timothy, and other seeds in order that he might come to a just conclusion as to the best amount to sow on an acre of ground.

In short, his conception of farming was that it was a dignified occupation, worthy of the best mental effort a man can bestow. He considered the "life of the husbandman the most delectable. It is honorable, it is amusing, and, with judicious management, it is profitable. To see plants rise from the earth and flourish by the superior skill and bounty of the laborer fills a contemplative mind with ideas which are more easy to be conceived than expressed."



President John H. Worst, who has been a regular contributor to the North Dakota Farmer for many years and whose opinion on agricultural affairs is highly prized by every citizen.

PROGRESS IN SUGAR BEET TRIALS

(For the Season of 1914)

Excerpt from the Report of Prof. J. W. Ince, N. D. A. C.

During 1914 the Division of Agricultural Chemistry of the North Dakota Experiment Station continued the sugar beet trials which have been in progress for the past three years in

Our Appreciation

To Our Readers

Did you ever draw forth from the mail-box farm paper after farm paper until you had "all you can carry" of those papers which cost you nothing and which you cannot stop coming, however much you order them discontinued?

Again do you *appreciate* the farm paper that treats scientifically of just the conditions that exist in your section of the country? Is it not a saving of your time to find in your state farm paper just what appeals to you rather than search over page after page of "space filling" material that is valueless in our conditions?

We *appreciate* the choice you have made and assure you that it will be our endeavor as in the past to publish only reliable material that is "pat and palatable." Our columns are at your service.

To Our Advertisers

These are days of "frenzied" circulation, when the farm paper a few months of age proclaims to the advertising world a 40,000 or 50,000 paid-in-advance circulation. The continued patronage of the very best class of advertisers in the columns of the North Dakota Farmer, with its modest circulation of 9,000, is certainly *appreciated.* Some of the advertisers have remained with us ever since the very first issue.

Our policy to accept no patent medicine, tobacco, liquor, or other questionable advertising, was initiated long before there was any law enacted to protect the reading public. While the hundreds of dollars, which might have been available from such contracts, were quite a temptation to a struggling publication, we have not only never regretted our stand, but take great pride in continuing to publish as clean a farm paper as will be found in the country. Here's to the high class advertiser!

To Our Employees

How many savory dishes lose much of their relish by being served in a slip-shod manner! Is it not so with a publication? No matter how valuable an article, if the paper is cheap and the printing is poor, it is a task to read what ought to be a pleasure.

With a quality of paper seldom used for farm papers, with monotype composition, than which there is no superior, and with continual painstaking care in press work, our employees have done all in their power to keep the mechanical feature up to the highest standard.

Our readers will join with the publisher in expressing our grateful *appreciation* to them for their faithfulness.

To Our Contributors

The worth of a publication depends on the reliability of its editorial and contributed articles. With this in view every editorial statement is carefully weighed, and every contribution critically reviewed before publication.

Among the foremost contributors is John H. Worst, President of the Agricultural College. No one in the state could possibly be more unselfishly loyal to the North Dakota Farmer and we take this opportunity of expressing our feelings of grateful *appreciation* for his words of good cheer, sound advice and kindly admonition.

Indeed, our chief assets are the good will of our readers and loyalty of those who have contributed to our pages, not for the sake of pecuniary gain, but that a state farm paper, scientific, clean and reliable, might be maintained in the interest of better farming and better farm homes thruout the state.

Yours for North Dakota,

W. G. CROCKER, Publisher

this state. The trials this season were carried on in co-operation with the Agronomy Division of the Experiment Station, the five Sub-stations, and eighty-seven farmers scattered over the state. From these co-operators there were submitted a total of one hundred and six (106) samples, ninety-four (94) from the Experiment Station and the Sub-stations and twelve (12) from farmers.

The samples generally seemed to be of satisfactory quality and condition, comparing most favorably in these respects with those grown in previous years. Some of the beets, however, had started second growth, which lowered the supply of sugar already in the beet. Another factor which might possibly have tended to lower the percentage of sugar was the superabundance of ground space allowed the beets while growing. The rows were usually from 30 to 36 inches apart and the beets 8 to 10 inches apart in the row. In sugar beet districts the usual conditions allowed are rows about 24 inches apart and beets about 8 inches apart in the row.

The year's work developed into a more critical study of eight varieties at the Experiment Station and on the Sub-stations at Edgeley and Williston. All of these varieties had been grown in the previous year so that an opportunity was thus afforded to study their record for two years. Klein Wanzleben Original, and the strains of the Wohanka variety are found to have the best record. The variety used at Billings, Montana, comes next to these three in order of standing.

Another phase of sugar beet trials was also undertaken, namely the effect of the length of the growing season upon the sugar content of the beets. At each station one variety was planted twice, the second date following two weeks after the first, and all the varieties were harvested three times with an interval of two weeks between the harvesting dates. The samples from all the stations increased steadily in sugar content from the first to the third harvesting, with the single exception of the third series from the Experiment Station. These samples were quite inferior to the others from this locality for a number of reasons. Late rains had induced second growth, the beets were larger than those of the other two series, and they had apparently not been chosen as carefully in the field. It is interesting to note that the second planting of one variety at the Williston Substation gave beets of better quality than the first planting for all three of the harvestings.

The samples from the Sub-station at Williston were of excellent quality, increasing from an average of nearly 18 per cent to 20 per cent sugar in the month of extra growth. This is all the more important since the average weight or size of the beets in the samples also increased. Usually, with other conditions equal, the larger the beet the lower the percentage of sugar. This year's trials at the Williston Substation confirm the results of previous years, namely that the soil and climatic conditions there are admirably suited for sugar beet production.

In view of the fact that the year's work was principally upon the samples from the Experiment Station and the

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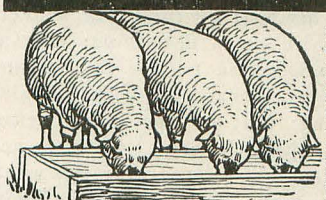
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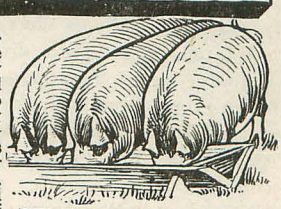
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D. J. GEIKEN, Supt., Sheep & Hog Dept., N. Dakota Agricultural College, Fargo, North Dakota

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Name.....
P. O.....
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Sub-stations at Edgeley and Williston, a further study was made of all the samples and trials reported for these stations in the past five years.

For commercial purposes a beet of over 12 per cent sugar content corresponding to 12.5 to 13.5 per cent sugar in the juice, at least 80 per cent purity, and which weighs between one and four pounds, is considered the most desirable. The contracts of most sugar companies with the farmers are based on these figures, but at times variations from them are accepted.

North Dakota Progress

By W. C. Palmer, Agri. Ed. N. D. A. C.



F all the states of the union North Dakota leads in county agents consolidated schools and county nurses." This statenmet was made by Dr. A. E. Winship of Boston, who has just spent three years investigating educational progress in North Dakota. Dr. Winship is the best authority on educational work in the United States. Since the civil war he has been in practically every state of the union every year studying educational work. He has already made five trips to the Pacific this year and is now on his way there again. He makes a special study of a few states each year, one of which has been completed on North Dakota.

Below are a few of the statements that he made in an address before a teachers' institute at Buffalo Tuesday: "North Dakota is doing things. She has more consolidated schools than any other state. In the last four years 333 schools have been consolidated, over 1000 dinky one-room schools have been closed and 200 more kept from starting by building consolidated schools. North Dakota also leads in county nurses. Seven counties have made provision for them already." He cited one case of where the county ocmmissioner was a little opposed to the county nurse. However, he voted for her just because the county superintendent said it was a good thing. A little while after the appointment the nurse in visiting a school found a boy who had defective eye sight. She called the attention of the teacher to it. The parents took the boy to an oculist and found out that if the eyes had been neglected a couple of months longer one eye would have become blind and that soon the sight in the other eye also would have been lost. But taking it in time both eyes were saved. And the boy was the son of that very county commissioner. He related many incidents to show how the nurse had detected things in time that if allowed to go on would have lead to serious consequences. North Dakota also leads in county agents in proportion to the population of the state. There are 21 of these men who are bringing to the farm the latest information and are also organizing the farmers so that they will have the benefit of organization in carrying on their work as well as in learning more about the best methods of farming. He said that some people are sitting on the tail of progress and shouting whoa! These are the ones who are opposing these progressive moves.

He said that he would wager that there was no one who objected to getting his mail by rural free delivery even tho it was a new thing: that no one would refuse to ride in an automobile, yet it had not been in existence long; that no one would refuse to use the telephone, another new convenience. Nor that any one would refuse to have his grain threshed with a threshing machine, even tho perhaps his father used the flail. These new things are all accepted yet many a mae think, that what was in the school when he was a boy is all that is need-

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201 FIFTH ST. NORTH Phone 926 FARGO, NORTH DAKOTA

ed in the school now; that what was good enough for him or his father is good enough in the schools now. Then he asked the question why should the school stand still, if all the other things were being improved. And he brought out the fact that the school is not standing still, but it is progressing; that it has progressed so much that there are many things in the schools today that had not even been thought of ten or fifteen years ago. The first teachers' cottage was built only six years ago, yet it has in this short time become quite common. The first county school nurse in North Dakota was appointed less than a year ago, yet seven counties have already hired or made provision for having a nurse.

He said that October second was a red letter of his life, he was not sure that he had any other that was quite its equal. It was the laying of a corner-stone for a consolidated school in a township in Barnes County. There is no town or railroad in the township. The building is to cost $12,000 and will have all the modern improvements including flush closets. It will have as good accommodations as any school in city or country, tho others may be elaborate. The chairman was one of the pioneers that came 35 years ago and many of the others had been there over thirty years. They came in ox-carts then, now they came in automobiles. When it came to laying the corner-stone they put into it the names of the first township and school officers and they were all Scandinavian. Then they put in the names of the present township officers and school officers and these were also all Scandinavian. When the prayer was offered it was in Norwegian. The chairman then introduced his two daughters to sing our national hymn and America pealed forth. These men who had come from a foreign land and made their homes in North Dakota were not only developing its resources, building homes and showing patriotism, but they are intent on giving their children the best training that they can procure, nothing can speak better for the future of North Dakota.

Dr. Winship left for Kansas City, from there goes to Texas and then to California before returning east.

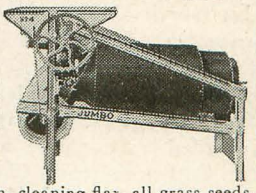
HOW OLD IS ALFALFA?

By Charles Cristadoro

You might as well blindly ask "How old is Ann?" Nobody knows. Maybe, some day, in ages gone, some one regarded it as some kind of a weed. Were a cabbage bitter, even poisonous; if celery, when eaten, gave one the blind staggers, and if wheat were so hard that no roller or stone could crush it, all the above would be considered worthless weeds until a Luther Burbank had taken the "pizen" out of the cabbage and celery and softened up the wheat a little to make it amenable to the rollers. When we can find no use for a plant we call it a weed.

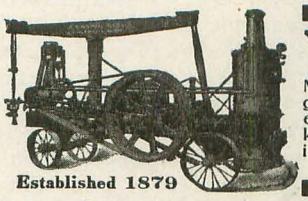
When the first hundred thousand bushels were harvested, and the same taken to the elevators for sale, of the then newly-tried Russian wheat (durum wheat, it is called, that is the richest in gluten and sugar of all the wheats and makes the best and most nourishing bread known), because it was too hard to grind, that is to say, because the rollers of the mills were not sufficiently chilled or tempered to turn

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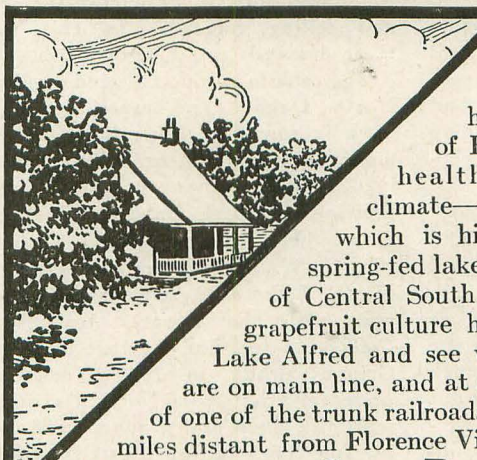


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You Must See Before You Buy Land in or About Lake Alfred

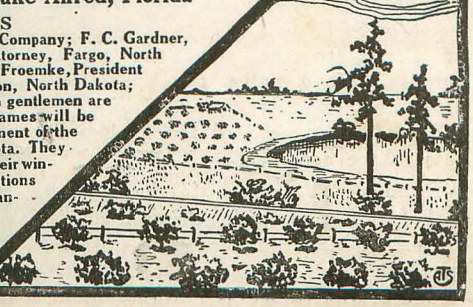
You must inspect our home sites and examine our citrus fruit land—or authorize your personal representative to do so for you—before we can sell to you. Lake Alfred is an established town, with electric lights, water, schools, churches, hard-surfaced roads and other facilities and conveniences. Make a citrus fruit grove and enjoy healthful out-of-door existence the year round. Write for our illustrated booklet.

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Geo. H. Hollister, President Northern Trust Company; F. C. Gardner, Gardner Hotel Company; B. G. Tenneson; attorney, Fargo, North Dakota; Ed Pierce, banker and attorney; F. W. Froemke, President Ransom County Immigration Association, Sheldon, North Dakota; Thomas Pierce, banker, Enderlin, N. D. These gentlemen are prominent citizens of North Dakota, whose names will be recognized by persons familiar with the development of the eastern portion of the State and western Minnesota. They became interested in Florida through spending their winters there and have thoroughly investigated all sections of the state. A considerable number of other substantial citizens of the Dakotas and Minnesota live at Lake Alfred during the winter; you are invited



it into flour, the wheat buyers at the elevators actually refused to pay a cent a bushel for it, and that year the farmers actually were obliged to cart it back to the farms and feed it, like pigweed, to the hogs. And this very wheat was the highest in price of all wheats in Russia or Europe. We know now how to mill it, but we had not learned 20 years ago! So how long ago alfalfa was regarded as a weed, how many centuries before the Christian era in fact, in the dimness of the ages gone, nobody knows. Perhaps, like Topsy, it may have primarily "growed up" a useful plant. The Arabs, it is said, gave it the name it bears, "Allahfah-fah," reduced to alfalfa. So allah, in his beneficence, gave it to the Arab.

Horses, cavalry of the ancients, it is said, could not have covered the ground they did but for alfalfa as a fodder. So it may be considered that alfalfa has played a great part in the civilization of the world. In far off Siberia we are gathering today supplies of seed of a new (to us) and very hardy alfalfa. Everybody, herbivorous, in the animal kingdom, seems to like alfalfa, horses, cows, hogs, sheep, chickens, etc. And there is a reason, for of all nourishing grasses alfalfa takes the lead in protein.

Some call it the "everlasting grass," because its roots take deep hold and it goes on from year to year, of course calling for water from the soil, but gathering nitrogen from the air and, by its root system, enriching the earth. Why alfalfa transpires so much water from the soil may be figured out this way. Alfalfa is very high in protein and that demands primarily nitrogenous plant-food in the soil. To render plant-food available for absorption by the alfalfa roots it must be made soluble by water, and in absorbing the excess of nitrogenous plant food, of course, the water is taken with it. A pound of dry sorghum takes 306 pounds of water from the earth to produce it; corn, 369 pounds; potatoes, 448 pounds; barley, 539 pounds; sweet clover, 709; and alfalfa 1068 pounds. It goes to show that alfalfa will have water if it must produce.

A ton of alfalfa has the feeding value of 60 bushels of oats. Two tons of alfalfa to the acre, the alfalfa equals in food value 120 bushels of oats, and no acre or acres of farm land reports a yield of 120 bushels of oats to the acre.

Professor Palmer, of the North Dakota Agricultural College, says: "There is no crop that will produce so much food per acre as alfalfa. It is one of the surest, if not the surest, crops that can be grown after it is well established." Sweet white clover is, by some, regarded as of almost equal feeding value with alfalfa, and sweet bee-clover can be made to grow where alfalfa can not be made to start, because of either lack of water or an absolute worthless condition of the land. Almost from a brick or asphalt pavement will sweet clover sprout.

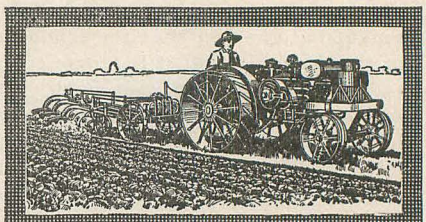
NORTH DAKOTA ALFALFA SEED

North Dakota alfalfa seed is in good demand over a large part of the United States. Many inquiries are reaching the North Dakota Experiment Station from states to the East and South. Director Cooper states that most of these people want the Grimm seed and want to be sure that they secure the real Grimm. These demands are for considerable quantities so that several in a community could well start in producing the seed and selling together. In this way these demands could be satisfied.

The alfalfa produces seed well in North Dakota and especially when sown in rows. It is doubtful if more money per acre can be made in farming anywhere than in alfalfa seed growing in North Dakota. The seed grown here is proving the hardiest. Mr. C. W. Dynes, formerly with the North Dakota Agricultural College, now with the Cornell Agricultural College, states that they are using the Grimm alfalfa in New York and preferably that from North Dakota.

Alfalfa does not produce seed well in New York or in any of the states east of North Dakota, so that the farmers in the whole eastern half of the United States will have to buy alfalfa seed from North Dakota and North Dakota seed is the best for them. The growing of alfalfa is being spread all over this big territory. Another factor to consider is that in this territory the farmers are yet sowing 20 pounds of seed per acre, tho this amount will possibly be reduced some, yet likely not to less than 10 pounds per acre.

Those who wish to secure the Grimm seed to start with can usually



Back of an Avery Outfit Is a Good Pedigree

First of all—behind an Avery Outfit is the knowledge that comes only from long experience. For more than 10 years the Avery Company has been experimenting, building and developing power farming machinery. The first company now manufacturing tractors and plows to design and build a power plowing outfit.

Second—the Avery Company were designers of the first "self-lift" plow, the only motor with removable inner walls, the only electric starter, etc. There are more acres plowed every year by Avery Outfits than by any other make.

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We have given Avery Outfits the best backing any man could ask. There are 7 sizes—from 1 to 10 plows—fit any size farm. Learn *all* the facts about them. Write now for a complete tractor and plow catalog or call on any Avery Agent, Branch House, Jobber or our Home Office.

AVERY COMPANY
4256 **Iowa Street**
Peoria, Ill.

AVERY One Man Outfits
7 Sizes-Fit Any Farm

Self-Draining LOCK



Won't Hold Moisture

Compare the **Square Deal Lock** with all others and you will see why it is the favorite with discriminating farmers everywhere. It double grips the stay and strand wires without cutting, breaking or slipping. Looks neatest, holds firmest, and lasts longest.

SQUARE DEAL FENCE

has one-piece stay wires that prevent sagging, bagging and buckling; also wavy strand wires that give springiness, elasticity, life. Heavy 99 3-4% pure galvanizing.

FREE To Landowners Only. Ropp's New Calculator—a 160 page book (worth 50c) answers almost any problem on the farm. Sent free with Square Deal Fence Catalog.



(39)

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SEED WANTED

We are in the market for North Dakota grown TIMOTHY CLOVER, ALFALFA, BROMUS and MILLET of all varieties.

Send us samples of any high grade grass seed or seed grain you have for sale, and we will make bid on same F. O. B. your station. WRITE US TODAY.

FARGO SEED HOUSE

Fargo, - North Dakota

find out thru the Experiment Station where such seed can be secured. When the alfalfa seed has been located it is a good plan to secure a sample of it for sending to the State Seed Commissioner. He will test it for germination and for weed seed. If the report is all right buy the seed with the agreement that it is the same as the sample submitted. To make real sure, when the seed arrives send a sample of it to the seed commissioner for a report. Hard seed is to be avoided and weeds need to be watched for as bad ones sometimes come in alfalfa seed.

The State Seed Commissioner will examine the fields when in blossom and testify to the kind and freedom from weeds and under some conditions the State Seed Commissioner will seal the seed in bags.

It is not often that one state comes so near having a monopoly on a product that nearly all the states want, as North Dakota has on the growing of Grimm alfalfa seed. Alfalfa growing is being rapidly spread over the whole union and no seed has done so well as North Dakota Grimm.

THREE MORE COUNTY AGENTS

Three North Dakota counties have lately made appropriations for supporting County Agents. H. J. Boyts began in Benson County in July. He came from Minnesota. The farmers of Benson County have started the Esmond Shorthorn Breeders' Association and several farmers' clubs. They were much in need of some one to help with these organizations and the many other problems in the county.

In Walsh County the County Agent gives two-thirds of his time to the county work and one-third to the County Agricultural and Training School. Paul Carpenter has been appointed. He has spent four years at Red Lake Falls, Minn. He was in charge of the agricultural work in the high school and also did much extension work thruout the county.

Towner County has voted the necessary funds for supporting a county agent. As yet no appointment has been made. As soon as the right kind of a man can be found the work will be started. The County Agent has so many duties that it is hard to find men qualified for this work. Looking after the agricultural interests of a county is a big job. The County Agent is bringing about organization among the farmers. Before the coming of the County Agent it was usually each farmer for himself. The farmers' club is the beginning and from it develops co-operative enterprises of different kinds.

CURING SEED CORN

Seed corn is being cured in various ways at the North Dakota Experiment Station. The corn put up in strings and hung in the attic of the seed house is curing out the best. The windows are left open so that the air can circulate freely. Since the cool weather came a stove was put in and the room kept warm. The corn that was put into shallow trays (shallow boxes with a wire screen bottom) is not drying as well as that in the



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We Cut Your Freight Rate ½

The Scandia Fish Co. announces that in order to give a still further improved service to its customers in North Dakota and Montana it has this year established a branch distributing warehouse at Fargo, North Dakota.

Our sole object in establishing Fargo as a distributing point is our constant aim to get our products to the buyer in the shortest possible time and putting our fish in his hands at the lowest cost.

Inasmuch as our shipments will now be made to you wholly within North Dakota you secure very low freight rates as the Interstate ruling cannot effect our shipments.



Frozen Split Rock Herring. 100 lb. package **$3.75**; 50 lb., **$1.90.**

Frozen Pickerel, per pound.....**$.07½**

Pike at **$.10½** per lb. **Trout** at **$.12½** per lb.

100 lb. Keg Salt Trout, $8.45; 50 lb. keg, **$4.75.**

100 lb. Keg Whitefish, $10.50; 50 lb. Keg, **$6.00.**

100 lb. Keg Herring, $3.75; 50 lb. Keg, **$2.30.**

10 lb. Pail Spiced Herring.....$1.25.

22 lb. box Smoked Bloaters.....$1.65.

We will pack any assortment of frozen fish from 10 pounds upwards without extra cost.

REMEMBER the fish you get from us are the ones you read about, Big, Fat, Tender and Juicy. Send your order now; or write for price list and be the first to enjoy these good fish this winter.

SCANDIA FISH COMPANY
Dock A, - - - - Duluth, Minn.

strings, and some of it has molded. In other years the corn has cured very readily in these trays. This shows that the corn is harder to cure this year than usual. Some of the corn put up in the strings was in the milk stage when put up and that too is curing nicely too.

APPRECIATED

We never offered a better premium and those who have accepted the offer **appreciate** the value of the Steel Document Box for valuable papers.

Here is a letter just received from a man who found the premium satisfactory, and passed a good thing on to his neighbors:

North Dakota Farmer:

Find enclosed check for $3.00, for which send to these three addresses the North Dakota Farmer, one to each, and send me the three steel document boxes, each with two keys: Wm. F. Glabow, William Nelson, and Milton Boehm, Aurelia, N. D.

Yours truly,

S. O. Stark.

Remember we give the N. D. F. two years, new or renewal, and this box for $1.00, stamps, money order or bill.

North Dakota Farmer, Lisbon, N. D.

CALVES ON SKIM MILK

Which are the skim milk calves, was the puzzle. Two lots of four calves each, one fed whole milk and the other skim milk and boiled flax seed. The two lots looked equally sleek and thrifty. Mr. Peters, Animal Husbandman of the North Dakota Experiment Station, explained that the experiment was undertaken to determine how well dairy calves could be grown on skim milk.

The first three weeks both lots were fed whole milk. From then on, Lot No. 1 was fed 8 pounds whole milk and 8 pounds skim milk daily, while Lot No. 2 was given 16 pounds of skim milk and one pound of boiled flax seed, which replaced the fat taken out in the cream. During the first three months Lot No. 1 made somewhat larger gains and looked a little more thirfty, but during the next three months, Lot No. 2 caught up. At six months several experienced dairy cattle breeders pronounced the calves in Lot No. 2 equal to those in Lot 1 in individual merit and dairy development. When the calves were five weeks old they were also fed clover hay and a grain ration made up of equal parts whole oats and bran. To this was added one-tenth by weight of linseed meal. It cost $19 less per head to feed the skim milk calves than those fed half whole milk, to the age of six months.

Among Our Advertisers

BUILD UP THE HERD

Encouraged by a keen and growing demand for highly-bred and high-producing dairy stock, we are offering all our heifer and bull calves this fall from cows hard to beat anywhere, and which are practically pure Holstein, the calves coming from registered De Kol sires, at $20 per head crated and delivered to your express office. The express rates on long distance shipments are very reasonable since the reduced rates went into effect, which together with the low price of the calves gives one an opportunity to build up a herd of this breed at a very reasonable price. Realizing fully that our success is dependent upon that of our customers, we ship out only sound young animals, healthy and vigorous, and guarantee satisfaction upon arrival of all stock at their destinations. We now have 20 calves about ready for shipment and anyone writing the

LARGE TURKEYS

FAT DUCKS, GEESE AND CHICKENS

Wanted now and for the Holiday markets. Alive or dressed. Ship us your Eggs, Cream, Veal, Hogs, Beans, Hides, Wool, Rabbits.

Before you sell be sure and write for our price list. A square deal guaranteed.

The R. E. COBB CO.
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LOOK! $109 Buys This Improved 1000 Bu Competitor Bin

The Northfield Bin And Comb. Corn Crib

Costs less than 10cents per lb. delivered to your station. The COMPETITOR is the heaviest and best made moderate priced granary on the market. Write for folder. Don't be a dumper. Prices are usually lowest at harvest time. 10c per bu. rise pays for this granary. Don't let the speculators make all the easy money. Get a fire and rat proof metal granary and store your crop in perfect safety for full market value. The old reliable NORTHFIELD still stands at the head for efficiency and substantiability. The most thoroughly ventilated and best made portable, sectional, metal granary. Thousands in use. All giving perfect satisfaction. Sheet metal used in the Northfield is nearly twice as thick as ordinary. Samples free. The 1,000 bu. Northfield costs less than 8c per lb. Absolutely rain, snow, bird, vermin, wind, mildew, rust and fire proof. Internal ventilator drys out dampest corn husked. Easily and quickly set up. Write for new catalog. Free.
Northfield Iron Co., 180 Nico Bldg. Northfield, Minn.

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We rebore cylinders and fit oversized piston and rings. We make all our own castings and are, therefore, in a position to save you money on this class of work. Now is the time to have your cylinders rebored as you can have it done cheaper.

We carry a large stock of structural steel and iron, also shafting, hangers, wood split pulleys, babbitt, bolts of all kinds, Majestic Coal Chutes and Hog Troughs. We make castings of all kinds.

We make a specialty of re-fluing boilers, and making smoke pipes. We have a large Oxy-Acetylene Welding Plant, Machine Shop and Boiler Shop in connection. Let us quote you prices on any work you want done in our line.

Fargo Foundry Company

Edgewood Farm, Whitewater, Wis., will get full particulars of the stock offered.

SPENDING MONEY

Attention is called to the advertisement of Andersch Brothers, who have patronized the columns of this magazine for many years. The excellent price for raw furs will repay boys of North Dakota for a little effort in the line of trapping, to say nothing of the thoro enjoyment of the sport. Now is the time to lay plans for a profitable winter sport.

GEORGE WASHINGTON—FARMER

The readers of the North Dakota Farmer will enjoy an extract from this excellent work by Paul Leland Haworth. The volume is well illustrated, is bound in cloth, and sells at $1.50. A copy may be obtained from Bobbs-Merrill Company, Indianapolis, Ind., the publishers.

RENVILLE COUNTY LAND

In our advertising columns this month will be found the advertisement of a former North Dakotan, M. O. Hall, for whom the city of Mohall was named. Judging from the returns received this year from his farm the soil of the tracts of land he has for sale must be of superior quality, and those desiring land in Renville County will do well to correspond with Mr. Hall, 3320-30th Street, San Diego, Calif.

THE BROWN MOUSE

The Brown Mouse by Herbert Quick, an interesting story, is really a plea for more practical education in the rural schools. The scene is laid in Iowa and the new teacher upsets the district with his new ideas of teaching. As the author says: "Let us cease thinking so much of agricultural education and devote ourselves to educational agriculture, so will the nation be made strong."

The publisher of this magazine has read the book with not only profit, but keen delight. Published by Bobbs-Merrill Co., Indianapolis, Ind. Price $1.25.

BIG MONEY IN TRAPPING FUR BEARERS

A. B. Shubert, Inc., of Chicago, the largest house in the world dealing exclusively in American raw furs, in a letter to the North Dakota Farmer says in part as follows:

Does the average farmer stop to consider the thousands and even millions of dollars that are paid out every year by the large fur houses for the skins of the "farm yard pests"? The mink a menace to the chicken coop, the skunk, muskrat, weasel and other fur-bearing animals, classed as "varmints" and considered a nuisance to the crops, all have their intrinsic value and it would be well for many to forget the nuisance end of the story and look at the profit side.

The money picked up by the wise farmer boy during the fur season, to say nothing of the professional trapper revenue, is something that would make a great many people sit up and take notice. When the European War commenced raw fur went on the downward turn and it was just one year ago that it was hardly worth while to skin these small fur-bearers and ship their fur, but since the surplus carried over from the raw fur season of 1913-14 has been consumed and the supply and collection of 1914-15 has also been consumed, the supply at the present time equals the demand and consequently with the possible exception of Mink, the prices have gone upward and trapping today is a mighty profitable occupation. One year ago 75 cents to $1.00 was good value for a Skunk, $1.00 to $1.25 was considered a high quotation for Raccoon and Muskrats sold on the average from 8 to 10 cents, and strange to say, these figures were all that any fur shipper expected. Compare these prices with present day values. Is it any wonder that the farmer boy finds it profitable to get out and trap these so called "varmints."

The golden opportunity of the farmer boy to pick up a neat pile of money in his spare time this winter should not be overlooked and the exercising of a little "common horse sense" will go a long way towards determining the amount of his earnings.

HIDES AND FURS



Send for our circulars and pricelists telling why we can pay more money for your goods than our competitors.

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The fastest growing Hide and Fur House in the Northwest

ABERDEEN, SO. DAK.

You will receive returns from us much quicker than from Eastern and Southern Houses.



You can be sure of the highest possible price for

Hides, Furs, Pelts, Etc.

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Northwestern Hide and Fur Co.

Est. 1890

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Send for quotation price list and catalog of Trappers Supplies. We give a good luck watch fob free for every shipment or purchase of $5.00 or over. Reference: Any bank in Minneapolis



Ship your **FURS** HIDES AND PELTS

To McMILLAN FUR & WOOL CO.

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Old Reliable (35 yrs.) and Largest Dealers in the Northwest. Pay High Prices. Quick Returns. Satisfaction.

Free! Circulars to anyone interested in Raw Furs. Trappers Guide to those who ship to us.

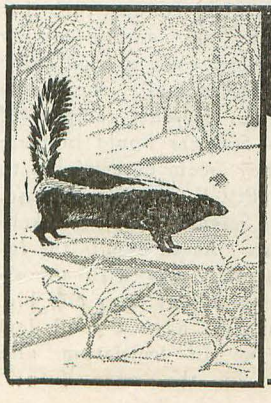


WE BUY **FURS AND HIDES**

for spot cash. 10 to 50% more money for you to ship Raw Furs and Hides to us than to sell at home. Write for Price List, Market Report, Shipping Tags, and about our

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450 pages, leather bound. Best thing on the subject ever written. Illustrating all Fur Animals. All about Trappers' Secrets, Decoys, Traps, Game Laws. How and where to trap, and to become a successful trapper. It's a regular Encyclopedia. Price, $2. To our customers, $1.25. Hides tanned into beautiful Robes. Our Magnetic Bait and Decoy attracts animals to traps, $1.00 per bottle. Ship your Hides and Furs to us and get highest prices. Andersch Bros., Dept. 37 Minneapolis, Minn.



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Get "More Money" for your Skunk

Coyotes, Muskrat, Foxes, White Weasel and other Fur bearers collected in your section

SHIP YOUR FURS DIRECT to "SHUBERT" the largest house in the World dealing exclusively in NORTH AMERICAN RAW FURS a reliable—responsible—safe Fur House with an unblemished reputation existing for "more than a third of a century," a long successful record of sending Fur Shippers prompt, SATISFACTORY AND PROFITABLE returns. Write for "The Shubert Shipper," the only reliable, accurate market report and price list published.

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North Dakota Farmer

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PROF. C. B. WALDRON, Fruits, Forestry, Insect pests.

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Vol. 17 NOVEMBER, 1915 No 5

War or no war, the world must be fed and the farmer's business is to feed the world. The farmer can't be eliminated without eliminating the world.

The potato crop this year, like the corn crop, was not entirely profitable; nevertheless both corn and potatoes are bound to cut a large figure in the future prosperity of this state.

So long as it costs more to distribute farm products than it costs to raise them, there will be a big explanation coming from the middle-men. Yoakem says for that which producers receive $6,000,000,000 consumers pay $13,000,000,000. Why this spread?

With Tokay grapes one cent a pound in California and from ten to fifteen cents a pound in your home town, one wonders among whom the nine or fourteen cents are divided. Is there anything wrong with our system of distribution? Is it any wonder that farmers do more or less kicking about the manner in which their business is managed for them?

Keeping the boy on the farm continues to be a live question; first, because the farm needs the boy and, second, because the boy needs the farm. We have educated quite enough for town occupations, and all too little for country occupations, and since the average boy is bound to have an education, the only sure way to keep him on the farm is to educate him for the farm.

The very best products of the farm have the least competition.

The fact that farming is a business and should be—all divisions of it—conducted on a strictly business basis, is not only rapidly engrossing the minds of farmers, but the minds of unbiased business men as well. Farmers have hitherto studied the productive side of the business, so far as they have given farming any study, and trusted to quite another class to distribute the crops and to make and execute the laws that govern business in general. If the result has not been a complete failure it nevertheless has proven unsatisfactory. Human nature seems to be so developed that, contrary to the Biblical injunction: "It is more blessed to give than to receive," opportunity to take a liberal toll should not be neglected.

All the farmer asks is a larger portion of the consumer's dollar, and he is right in demanding it. He does not ask more dollars from the consumer, but a larger proportion of each dollar. In fact the farmer should receive a much larger portion of the sum paid for farm products, and at the same time the consumer should pay considerable less than he is now paying. This would injure no one except the unnecessary middlemen and, incidentally, the speculation in food products. Middlemen are just as necessary, however, as farmers—but not so blamed many are needed. A thoro organization on the part of producers would correct many of the evils they complain of. It is high time that less talk and some real constructive work be done.

The fact that farmers are not as well prepared, by training and experience, to sit as law-makers and to occupy executive and administrative positions in the government is not wholly their fault. They have been either too busy or too modest to demand their share in governmental affairs, and the real politicians have seen to it that they confine their political activities to voting—simply voting. Sometimes even a good thing is overdone. Occasionally the worm will turn. The present temper of North Dakota farmers would indicate as much. They seem determined to assert their rights, in a political sense, and something mighty heavy is likely to drop in 1916. At all events the indications point that way with a positiveness that stands out clear and big. They will doubtless have a good deal more experience in legislation and statesmanship in the near future.

It is not what is produced but what is utilized that determines the profit.

Producing at the lowest cost and disposing of produce to the very best advantage makes up the best and most profitable farming.

The time has arrived when agricultural education should receive paramount attention instead of being treated as a side line in the high schools, and the Agricultural College being barely kept alive, as a matter of legislative duty. The thing the prosperity of the state depends upon and which can be expanded almost indefinitely should not be under-rated nor considered as a local sop when appropriations are made. At a trifling additional cost, speaking comparatively, the profits of farming might be doubled, in this great agricultural state. It doesn't pay to "starve the goose that lays the golden egg," and yet too many consider that farmers can be made out of any sort of human material not keen enough to make its living by the sweat of the other fellow's brow.

STATE HONORS

We have just received word that Knudt Tideman of Kindred, N. D., has been awarded the medal of the Panama Pacific Exposition for the largest yield of corn in the state this year. His yield of 109.1 bushels is exceedingly good for the year 1915.

The North Dakota Farmer would be very glad to receive word from all those who have raised 100 bushels or more of corn during the last five years. We shall be very glad to publish the list and will show our appreciation in a substantial way for the trouble in sending in the record.

WARNING

It has come to our notice that two women who sign their names M. Mayer and E. Cross have been soliciting subscriptions for the North Dakota Farmer and several Eastern magazines without any authority from this paper or the others.

While we are not responsible for these fraudulent acts, we are going to honor every receipt given by these parties for the North Dakota Farmer, that the good name of this paper may be maintained.

Our solicitors are always given credentials. Always demand credentials of traveling subscription agents. Our readers will confer a favor upon us by reporting to us any who have been thus fraudulently dealt with.

Pure Food Advertisers

The products advertised below are in compliance with the pure food law of North Dakota and are of the highest grade. ASK YOUR GROCER FOR THEM.



"Gee—— they're good!"

A boy in school defined wholesome food as—"stuff you kin eat's long 's you kin hol' some."

WAMPUM
Canned Goods

are wholesome as well as delicious. Give growing children plenty to eat. WAMPUM brand won't hurt them. Sanitary, enamel-lined packages make contents SAFE. Highest EXTRA-standard quality; reasonable price.

A brand of Canned Goods from S-O-W Company is a big asset to a dealer.



STONE-ORDEAN-WELLS COMPANY
"Largest in the Northwest"

Our Candies Are Pure

Chaney-Everhart Co.
Fargo, N. Dak.

"BUY" **"EAT"**

HOME BRAND
Pure Food Products

"ECONOMY" **"SATISFACTION"**

Griggs, Cooper & Co.
MANUFACTURING WHOLESALE GROCERS
ST. PAUL, MINN.
Main Offices:
CORNER THIRD AND BROADWAY

ZIEVE'S
Fruit Nectar
WITHOUT AN EQUAL

One taste always means more

A 4-oz. bottle makes 2 gallons
Costs 25c

A Compound of Pure Fruit Juices, Vegetable Oils and Herb Ingredients

For Sale by first class Grocers

If your grocer does not handle it Write Us

THE ZIEVE NECTAR CO.
216-Fifth St. North
Minneapolis, - - Minn.

THE SUCCESSFUL FARMER



Considers health his greatest asset and is always interested in pure foods.

"CHEER-UP"
Self-rising
PANCAKE FLOUR
and
Sterilized
BREAKFAST FOOD

are made in our sanitary mill from selected wheat in North Dakota and packed in air-tight cartons. Order a package from your grocer to-day and you will be pleased with these economical and healthful foods.



Manufactured and Guaranteed By
THE BEMMELS MILLING COMPANY, LISBON, N. DAK.

Eat North Dakota Sweet Corn

Sanitary

PACKED BY ONLY FACTORY OF ITS KIND IN THE STATE. SEALED IN SANITARY CANS AT OUR MODERN THREE-STORY FACTORY



Delicious

NORTH DAKOTA CORN EXCELS IN SWEETNESS.

ASK YOUR GROCER FOR OUR BRAND.

WRITE FOR PARTICULARS

Sheyenne Valley Canning Co. - Lisbon, N. D.

Livestock Department

FARM AND STOCK NOTES
N. J. Shepherd

Use the wood ashes in the orchard.

With sheep, exposure to dampness tends to disease.

Overfeeding lessens the digestibility of all the feed.

The real dairy cow that eats most yields most.

Never allow cracks to take the place of ventilation.

A fast walker is better than a fast trotter on the farm.

Never change the feed of the growing colts too suddenly.

When the butter comes quickly it is usually soft and greasy.

Knowing our mistakes and avoiding them in the future is progress.

In the dairy, large yields per animal means less cost in making them.

Butterfat is the thing that determines the profit or loss in dairying.

Uniform flock of sheep will feed together better and fatten more evenly.

No young animal will attain to as good results as the one liberally fed.

As the pasturage fails grain or other feeds should be fed in corresponding amount.

Half the success with livestock consists in having a regular time for attending to them.

Regular hours of feeding, milking and churning will go a long way toward making dairying successful.

With common stock the animal possessing the largest amount of vitality will usually mark the offspring.

The future growth of the young pig and his owner's profit depend largely on his early treatment.

Colts require plenty of exercise in order to develop their limbs and muscles as they are growing up.

Impure or unclean milk cannot be returned to its original purity by any treatment in the home.

In general the best yields of fat are obtained from cows that give at least a fairly large flow of milk.

Every day that hogs are kept longer than is necessary to fit for market increases the cost and lessens the profit.

If the cow is a machine for turning feed into milk, why not give her all the feed she can profitably consume.

Better sheep will grow more pounds of wool and at the same time grow a carcass improved in the essentials to profitable mutton production.

Draft horses are valuable because of the greater amount of work they can perform in proportion to cost of driver, keeping, etc.

Nothing so gentles and improves a young horse as farm work. It is a constant gradual education, but care must be taken not to overwork.

Early in life a colt should be trained to be led by the halter and foretop and to be tied up and to have its feet handled.

It is not profitable to any man to so far neglect the wants of any of his animals as in any degree to impair their usefulness.

Economy in feeding is not measured by the bulk or value of feed eaten, but by the gain or return made by the animals consuming it.

There is no kind of stock that can be so rapidly improved by judicious selection and crossing as swine and nothing will degenerate so rapidly under neglect.

Give the growing colt plenty of room for exercise in order to harden his muscles and stimulate his appetite and he will grow faster and make a better horse when matured.

One of the best ways to enrich the farm is to turn the crops into flesh before sending them to market, giving to the land all of the fertilizer this process affords.

The milk should be separated as quickly as possible after milking; then the skimming will be cleanest, the skim milk will be best for the calves and the cream will keep better.

The evenness and regularity of feeding mark the degree of success reached in fitting a lot of hogs for market. Every day a hog is off his feed is a dead loss to the owner.

The sleeping quarters for young pigs must be dry and clean. If allowed to sleep in wet or damp beds their growth will be checked and they will be troubled with rheumatism if not other ills.

CARE OF HORSES—HEAVES

Caused by Faulty Feeding and Working—Complete Cure Impossible—Symptoms May be Relieved.

Heaves is a very common and annoying disease of horses, interfering seriously with the usefulness of the animal, and consequently detracting from its value. Mainly a disease of old horses, it is essentially the result of

CLASSIFIED ADS.

One Cent a Word

Small advertisements will be classified under appropriate headings at the low price of one cent a word for each insertion. Cash must accompany all orders. Each initial or number must count as one word. TRY IT HERE.

LIVE STOCK

DUROC JERSEY SPRING PIGS

Buy your new stock now while the price and express will be low. First class stock from prize winning sirec at reasonable prices. Unrelated pairs and trios a specialty. New stock for old customers.

Roy W. Jacobs, : Wadena, Minn.

100 Holstein Grade Heifers and Cows. Splendid cattle at right price. Must be seen to appreciate. In writing state ages and number wanted. **Paul E. Johnson, South St. Paul**

FOR SALE—Improved Chester White Pigs from April litter, either sex; pedigree furnished. **John F. Zimmerman, Davenport, N. D., Route 2.**

FOR SALE. Choice Chester White Boars and Gilts. From Prize-winning stock. **W. I. Grout, Abercrombie, N. Dak.**

FOR SALE: Chester White Gilts Bred to Dakota's Pride, a son of Sweepstakes No. 28006, the hog that weighed 1260 pounds. Also Pigs at weaning time.
THE PRATT FARM
Geo. A. Pratt, Prop. : Cooperstown, N. D.

For Sale: Poland China Spring Pig Boars, S. C. Whtie Leghorn Cockerels. Grimm Alfalfa Timothy and Clover Seeds. Catalog Free. **J. W. BECKMAN, COKATO, MINN.**

Red Polled. If you are looking for choice bulls all ages, write, **Howard H. Capener, Erie, N. D.**

Pure bred Percheron Horses and Shorthorn Cattle Stock for sale. **Nels Knutson & Sons, R. 1, Fullerton, N. D.**

THE PLEASANT GROVE FARM at Holmes, Grand Forks County, sells registered Shropshire and Oxford Rams and Ewes; also Polled Durham Bull Calves. **R. E. Strutz, Bismarck, North Dakota.**

FOR SALE. Two Holstein Bull Calves, nicely marked and fine animals; Ages three and four months. Sired by my herd Bull Sir Albino Beets Segis No. 116611. **Wm. Pewe, McHenry, North Dakota, R. R. 1.**

HIGH GRADE GUERNSEY CALVES
From our dairy herd, either sex, for sale. Prices ranging from $10.00 up, according to age.
RIVERVIEW FARM
Stern Bros., Prop. Frank Lamb, Mgr.
R. R. 2, Fargo, . . North Dakota

Meadowlawn Farm. The largest breeders in North Dakota. Percheron Horses, Shorthorn Cattle, and Berkshire Hogs. Where quality counts. Address: **A. H. WHITE, . . . Kramer, N. D.**

Choice Poland China Hogs always on hand Bred Gilts all sold, Register now for spring pigs, either sex; prices right. **Thos. Forbes, Petersburg, N. D.**

ENVILLA STOCK FARM

Envilla Stock Farm, Cogswell, N. D. will quote you special prices on Angus and Holstein Cattle, Shetland Ponies, Duroc Jersey Hogs, Wolf Hounds, Collies, Rat, Bird Dogs and other breeds, Angora Cats. All varieties of chickens turkeys, geese, ducks, guineas, pheasants, rabbits ferrets. Pets. Live Foxes, Skunks, Mink and Badgers.

Bixby's Red Polls

of A. R. Breeding

My herd bull J. D. Merryweather No. 24396 is from 1400-pound cows and is getting the size in my herd. His dam is a full sister to the World's Champion Two-Year-Old heifer. His first three dams average close to 400 pounds butterfat in one year.

J. S. BIXBY, : : LISBON, N. DAK.

faulty feeding and working, especially hard pulling or fast driving when the stomach is overloaded. Gross feeders are frequently subjects to heaves.

While in old, established cases there may be alterations in structure of the heart and stomach, the principal changes are observed in the lungs. These consist first in an enlargement of the capacity of the air cells thru dilation of their walls, followed by a passage of the air into the lung tissue between the air cells. Owing to such structural changes, it is impossible to prevent progressive development of the disease, which, however, under proper care, may go on slowly, the animal remaining serviceable for certain kinds of work for years.

Except in the very early stages the disease is readily detected. The symptoms are those which would naturally be manifested in a condition where the lungs are involved. A peculiar short, grunt-like cough is usually present, and when the animal is exerted a wheezing noise accompanies the breathing. The principal and characteristic symptom, however, is the jerky or double movement of the abdomen in an effort to force air from the lungs. The air passes into them freely, but the power to expel it is lost to a great extent; therefore the abdominal muscles are brought into play.

Indigestion is frequently observed in these cases, and the horse may have a depraved appetite, as shown by a desire to eat dirt and soiled bedding; and there is a tendency to the condition commonly termed "pot-bellied." The animal, tho a heavy feeder, becomes unthrifty and emaciated.

A poorly ventilated stable, humid weather, severe work, and overfeeding with coarse, dry feeds tend to aggravate the trouble.

As in this condition structural changes have taken place in the lungs, treatment, as a rule, can only be directed to the relief of the symptoms, and it is not possible to effect a complete cure after the disease is established.

In the case of an affected horse it will be an advantage to dampen the food with a mixture of one part of molasses to three parts of water, so that no dust may arise while the animal is eating. It is also desirable to restrict the amount of hay or forage, as large quantities of bulky feed which distend the abdomen increase the difficulty, and an animal with heaves should never be driven or worked when full of such material.

In these cases Fowler's solution of arsenic may be given in doses of 1 ounce in the drinking water three times daily. Ordinary lime dissolved in drinking water (limewater) will be found beneficial. Lime may be added to a barrel or cask of water, and after the resulting mixture has become clear thru precipatation of undissolved portions of the lime the lime water may be used freely in watering the animal.

REPELLENTS FOR PROTECTING ANIMALS FROM FLIES

From Report of H. W. Graybill, Bureau of Animal Husbandry

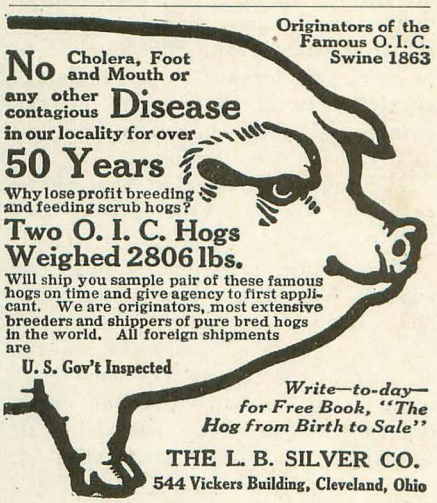
The biting flies that annoy domestic animals most in this country are the stable fly, Stomoxys calcitrans, and the hornfly, Lyperosia irritans. The bot flies are not biting flies, but are a menace to domestic animals because of the parasitic habits of their larvae. This is also the case with the screw-worm fly, Paralucilia macellaria, which deposits its eggs in wounds, and a bluebottle fly, Lucilia sericata, occurring in the United Kingdom and Holland, and certain species of Calliphora occurring in Australia, the larvae of which invade the wool and skin of sheep.

Repellents are more or less effective against all of these flies.

Opinions differ with regard to the injury by biting flies. The common opinion seems to be that these flies are responsible for great losses. However, a limited amount of experimental evidence relating to cattle seems to indicate that the losses, when they occur, are not great.

The repellent action of certain colors has been noted by various investigators. Light-colored animals suffer less from flies than dark-colored ones. One author (Marre, 1908) has recorded the observation of a farmer in France who found that a blue color applied to the inside of stables repelled flies. This observation seems to have remained uncorroborated.

Potassium tellurate has been recommended by Ochmann (1911) as an internal remedy for repelling flies.



PRAIRIE DELL STOCK FARM, GOLDEN MODEL DUROCS

The Prairie Stock Farm offers some of the best bred pigs in the state, sired by the following boars: Dakota Model and Golden Chief, out of shows by the following noted boars: Grand Champion Chief Col. International Grand Champion Volunteer, Dakota Model, and Golden Chief, and other good boars. Dakota Model was one of the largest boars in the state for his age. He was sired by Golden Model XX, a first prize hog and he by Golden Model 2nd. Dakota Model's dam was a half sister to the twice grand champion Crimson Beauty that sold at public auction for $610.00. Golden Chief is an extra large hog. He was sired by Col. Chief 2nd. first prize at Minnesota and South Dakota state fairs, and he was a litter sister to the Junior Champion boar at South Dakota state fair. Choice pigs of both sets. Sows bred or open. I can sell unrelated pigs. Ship via Soo or Great Northern .
Maurice H. Bliss, - - Genesee, N. Dak.

HOLSTEINS. Beautifully Marked Holstein heifer and male calves, 15-16ths pure, 4 to 6 weeks old, $20.00 each, crated for shipment anywhere. All from mature dams and heavy milkers, guaranteed. One car heifers a year old, $45.00. Write or send order to **Edgewood Farm, R. 10, Whitewater, Wis.**

DUROC JERSEYS Gilts out of such sows as Golden Model Queen 6th, Model Beauty and other sows as well bred as could be bought at the sales last winter. Write **H. N. HOYME, Jasper, Minn.**

HOLSTEIN Cows, Heifers and Young Bulls. All ages. Write **Envilla Stock Farm, Cogswell, North Dakota.**

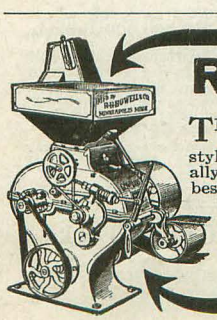
Lyndale Stock Farm

Breeders of **Registered Red Polled Cattle,** and **Big Type Poland China Hogs.** Some good bull calves for sale. Also have 75 March and April 1st pigs now ready to ship. Mostly all sired by a "Peter Mouw" bred boar.
J. E. BASS & SONS, Props.
Tolley, North Dakota

20 BULLS AT $150.00 EACH. For quick sale and make room for young calves, we are offering 20 GUERNSEY and RED POLLED bulls o, A. R. breeding for $150.00 each. Write for sales list at once. **Jean Du Luth FARM, Duluth, Minn.**

Big Type Poland Chinas

With quality; 100 to select from. Can furnish pairs not related, sired by four leading herd boar's in the 1000-lb. class, Mouw's Jumbo 3rd, Dignans Chief, Baron and Miller's Big Chief. We are booking orders for Gilts to be bred for Spring litters. Prices reasonable. Pedigrees furnished.
J. A. Dignan
Waverly, : : : Minn.



ROLLER FEED MILLS
GRIND A WAGON LOAD OF FEED FOR 10 CENTS.

THIS is the **Famous Howell Roller Mill** you have heard so much talk about. The new improved mill for the scientific grinding of grain. Old style Burr and Stone Mills are out of date. Thousands of them are being annually replaced by the Famous Howell Roller Mills. Grinds twice as fast as the best burr mill made. Does not heat the feed. Grinds Graham and Rye flour as well as feed. Has big capacity. Requires little power. No burrs or stones to wear out. Guaranteed to last a life time. Made in 13 sizes suitable for any size engine. Save one-half your time, gasolene and money by using a Howell Roller Mill. Write for catalog D.
R. R. HOWELL & CO., Mfgrs., Minneapolis, Minn.

However, Mayer (1911) failed to obtain results with the remedy, and it seems safe to assume that internal remedies will never prove practicable in repelling flies.

Liquid repellents may be applied by means of a dipping vat, a pail spray pump, an atomizer, or by means of a rag or a paint brush. The method to be employed depends on the individual preference of the farmer and the nature and cost of the preparation used.

The powder remedies that have been used are pyrethrum powder and tobacco powder.

Various oils, emulsions of oils, and mixtures of oils are used in repelling flies. Crude petroleum, cottonseed oil, fish or train oil, and light coal-tar oil may be used pure. Jensen (1909) recommends for dairy cows an emulsion of crude petroleum containing an admixture of powdered naphthalin.

Fish oil is rated as one of the best repellents and has been used alone and in combination with various other substances. Other substances that have repellent qualities and that have been used in various mixtures are pine tar, oil of tar, crude carbolic acid, oil of pennyroyal, and kerosene.

Jensen's formula is said to protect cows for a week. The protective action of fish oil is stated to range from less than two days (Parrott, 1900) to six days. Moore's formula is said to protect for two days. This mixture is safe when applied lightly with a brush, but not when applied liberally with a pail spray pump.

Laurel oil is a very effective repellent. Mayer (1911) found that the protection lasted from 2 to 12 days. The oil when used pure has an irritating effect unless it is applied lightly. According to Mayer the irritating effect may be overcome by combining it with linseed oil in the proportion of 1 to 10. The present author found that 10 per cent of laurel oil in cottonseed oil was active for less than a day.

A number of formulas for repellents for application to wounds have been recommended by various authors.

In experimental tests carried out by the present author the following results were obtained:

A 10 per cent mixture of crude carbolic acid (21.8 per cent phenols) in cottonseed oil has a very strong repellent action on flies, but this lasts less than a day, in consequence of which it is necessary to apply the mixture every day. The mixture should be applied lightly with a brush, since a heavy application with a spray pump is likely to cause phenol poisoning.

Mixtures consisting of 10, 20, and 50 per cent of pine tar in cottonseed oil have marked repellent qualities. They should be applied lightly and it is necessary to apply them every day. A liberal application of a 10 per cent mixture is deleterious to animals. This is also the case with half-and-half mixture of pine tar and Beaumont oil when applied lightly with a brush.

A mixture of oil of tar (14 per cent phenols, volatile with steam) in cottonseed oil and in Beaumont oil has a very marked repellent action. A 10 per cent mixture of oil of tar in cottonseed oil is safe. A half-and-half mixture of oil of tar and cottonseed oil when applied liberally with a spray pump and 50 per cent oil of tar in Beaumont oil applied with a brush are not safe. Ten per cent oil of tar in Beaumont oil is safe. When applied lightly it is necessary to apply 10 per cent oil of tar in cottonseed oil or 10 per cent oil of tar in Beaumont oil every day.

Mixtures of 10 per cent of oil of citronella, oil of sassafras, or oil of camphor in cottonseed oil are powerful repellents, but they are active for less than a day.

A heavy application of fish oil causes the hair to become sticky and fall out. A light application did not produce these results.

Pyrethrum powder is an effective repellent, but its action lasts only for about a day.

CARE OF THE COW—THE TUBERCULIN TEST

By Charles Cristadoro

The dairy white plague, bovine tuberculosis, is no theory. Go to the slaughter house when a reacting cow is down for slaughter and see for yourself. Cows do contract tuberculosis, consumption; they infect other cows; their milk is infected and infants fed on such milk, and calves and pigs, too, contract tuberculosis and very frequently die of it. There may be some who deny all this, but they are growing fewer and fewer each and every day. The greatest food problem of the day, world-wide in its scope, is the "clean and safe milk problem." The hand-fed infant, the growing child and the adult, the offspring of the dairy cow, even, are up against the milk problem. And it is not only milk but butter and cheese as well that help to scatter the white plague abroad in the land—unpasteurized milk and cream.

If cows are not segregated the whole herd becomes infected and in due curse the coughing and emaciation sets in and the cow even becomes unfit for use after slaughter, rotten with tuberculosis. And the cause of dairy tuberculosis is that a cow may go on for months badly infected, giving forth no "physical signs" of her ailment, and infecting other cows. Not long ago in England a fine herd of cows was tested with the tuberculosis test and, to the astonishment of the owner, 90 per cent of the cattle reacted under the test! All kinds of estimates have been made as to the average tuberculosis existing in the dairy herds of the country at large. Some have estimated the general average at 10 per cent, a figure far too conservative, and again others have estimated our dairy herds 90 per cent affected, but those who are inclined to follow the "happy medium" hold



Bumper Grain Crops

Good Markets — High Prices

Prizes Awarded to Western Canada for Wheat, Oats, Barley, Alfalfa and Grasses

The winnings of Western Canada at the Soil Products Exposition at Denver were easily made. The list comprised Wheat, Oats, Barley and Grasses, the most important being the prizes for Wheat and Oats and sweep stake on Alfalfa.

No less important than the splendid quality of Western Canada's wheat and other grains, is the excellence of the cattle fed and fattened on the grasses of that country. A recent shipment of cattle to Chicago topped the market in that city for quality and price.

Western Canada produced in 1915 one-third as much wheat as all of the United States, or over 300,000,000 bushels.

Canada in proportion to population has a greater exportable surplus of wheat this year than any country in the world, and at present prices you can figure out the revenue for the producer.

In Western Canada you will find good markets, splendid schools, exceptional social conditions, perfect climate, and other great attractions. **There is no war tax on land and no conscription.**

Send for illustrated pamphlet and ask for reduced railway rates, information as to best locations, etc. Address

W. E. BLACK,

Clifford Block, - Grand Forks

Canadian Government Agent.

that 50 per cent of the dairy cows today in the land are giving tuberculosis-charged milk. A condition, not a theory.

PRINCIPLES OF HORSE FEEDING

Extracts from U. S. Bulletin, by C. F. Langworthy

The problem of horse feeding is one which each feeder solves more or less for himself, the opinion regarding what is and what is not satisfactory feed varying more or less with the time and place. Opinions may differ as to the value of this food or that, but it is evident that the actual food requirements of a horse performing a given amount of work can not vary as a result of a change of opinion on the feeder's part. With horses, as with all animals, including man, the real problem is to supply sufficient nutritive material for building and repairing the body and furnishing it with the energy for performing work, whether it be that which goes on inside the body (the beating of the heart, respiratory movements, etc.), or the work which is performed outside the body (hauling a load, etc.). The body temperature must also be maintained at the expense of the fuel ingredients, but whether material is burned in the body primarily for this purpose, or whether the necessary heat is a resultant of the internal muscular work, is not known with certainty.

Composition of Feeding Stuffs

The feeding stuffs of most importance for horses are cereal grains, such as oats and corn, either ground or unground; leguminous seeds, as beans and peas; cakes, and other commercial by-products, as oil-cake, gluten feed, and so on; fodder crops, green or cured; and different roots, tubers, and green vegetables. In quite recent times cane molasses, beet molasses, and other beet-sugar by-products have assumed more or less importance in this connection.

Cereal Grains

The cereal grains resemble one another quite closely in composition, being characterized by fairly low water content and a considerable amount of protein and nitrogen-free extract. Some crude fiber, derived from the outer or bran layer of the grain, is also present. The superiority of one grain over another, if it exists at all, must therefore depend, in large measure, on some factor other than composition. It has been urged by many that oats possess a peculiar stimulating body called "avenin," and are on this account superior to other grains for horses. Oats undoubtedly possess a flavor or some such characteristic which makes them a favorite food with horses, but the most careful chemical study has failed to reveal any substance of the nature of the theoretical avenin. Recent experiments have shown that the fat of otas and oat straw is more thoroly digested than that of other cereals. This is suggested as a possible explanation of the superior feeding value of oats.

It is believed by many that horses show more spirit when oats form part of the ration. Discussing this subject, Director W. A. Henry, of the Wisconsin Experiment Station, says:

"Horses nurtured on oats show mettle which can not be reached by the use of any other feeding stuff. Then, too, there is no grain so safe for horse-feeding, the animal rarely being seriously injured if by accident or otherwise the groom deals out an oversupply. This safety is due in no small measure to the presence of the oat hull, which causes a given weight of grain to possess considerable volume, because of which there is less liability of mistake in measuring out the ration; further, the digestive tract can not hold a quantity of oat grains sufficient to produce serious disorders. Unless the horse is hard pressed for time or has poor teeth oats should be fed in the whole condition. Musty oats should be avoided.

"Horsemen generally agree that new oats should not be used, tho Boussingault, conducting extensive experiments with army horses, arrived at the conclusion that new oats do not possess the injurious qualities attributed to them."

The problem most often investigated has been the possibility of substituting other grains for oats wholly or in part in the ration of work horses without lowering their efficiency. In this connection the Maine Station studied the value of pea meal and middlings fed in the ratio of one part of the former to two parts of the latter and of mixed grains as compared with oats. The Utah Station compared corn and bran and shorts with oats; the North Dakota Station, bran and shorts, barley and bran, and mixed grains. As a whole these and similar tests offered practical demonstrations of the fact that oats could be replaced by other grains when circumstances warranted it.

At the New Hampshire Station the value of different grain mixtures for horses was studied with a view to learning how the cost of a ration could be diminished by lessening the amount of oats fed. The rations consisted of different mixtures of oats, bran, corn, gluten feed, linseed meal, and cotton-seed meal. Fairly good results were obtained with all the mixtures, that containing cotton-seed meal being least satisfactory, as it was not at first relished by the horses. The conclusion was reached that any mixed ration furnishing the desired nutrients at a reasonable price should be considered. A mixture of bran and corn 1:1 was regarded as a good substitute for corn and oats for work horses.

Tests carried on at the Utah Station have demonstrated the value of wheat for horses, a grain which sometimes has so low a market value that it may be profitably fed.

The North Dakota Station has carried on a number of tests with barley which furnished experimental evidence that this grain is a useful feed. When taxed to the limit by hard work it was found, in the experiments referred to, that the horses could not be supported upon barley quite as well as upon oats, and that it was worth slightly less per pound than oats with animals performing a medium amount of work. Mules did not take as kindly to barley as horses, and dainty horses would not eat it quite as readily as oats.

Barley may be fed whole to horses having good teeth and not required to do severe work. Since ground barley, like wheat, forms a pasty mass when mixed with saliva, it is regarded as more satisfactory to crush than to grind it, if for any reason it is considered undesirable to feed the grain whole.

Roots and Tubers

Carrots, Swedish turnips or rutabagas, and other roots and tubers, green vegetables, and fruits contain a high percentage of water and small amounts of the different classes of nutrients. Generally speaking, the percentage of crude fiber is smaller than in the green forage crops; but since the proportion of nutritive material is small in comparison with the total bulk, they are ordinarily referred to as coarse fodder. The use of these materials as food for horses has been attempted at different times with varying success, but it is not followed to any great extent in this country, tho quite common in Europe.

Ten pounds of roots has been suggested as the maximum quantity which may be fed without unduly distending the stomach or being too laxative. "An addition of 5 or 6 pounds of carrots to the daily food ration of ordinary working horses," Captain M. H. Hayes believes, "will almost always be of benefit; and 3 pounds a day will not be too much for race horses, even in the highest state of training. It is safest to give carrots sliced longitudinally, so that

they may not stick in the animal's gullet and thus choke him."

In the opinion of a recent German writer, about 12 pounds of raw potatoes per 1,000 pounds live weight may be fed to horses with advantage and, if supplemented with proper feed, there need be no fear of physiological disturbances. When fed in this amount the potatoes should be mixed with hay or cut straw to insure their being properly chewed. If small, they may be fed whole; if large, they should be sliced. In any case only ripe, healthy, unsprouted tubers should be used. It is said that horses should not be watered immediately after a ration containing potatoes.

Injurious Feeding Stuffs

In feeding horses precautions should always be taken to avoid materials harmful in themselves, or those which have become harmful. Dirt, small stones, etc., should be removed from grain by proper screening, and all feeding stuffs should be clean.

There are a number of plants which are poisonous to horses when eaten in any considerable amount. The loco plants, mostly species of Astragalus, are ordinarily regarded as of this class. These plants have been studied by the Colorado, Kansas, South Dakota, Montana, and Oklahoma stations among others, and by this Department, but the results obtained are not entirely conclusive. The poisonous properties of rattlebox (Crotalaria saggittalis) were demonstrated by the South Dakota Station, and those of some lupines by the Montana Station. According to recent experiments at the Vermont Station the common horsetail (Equisetum arvense) may cause poisoning when present in hay. It was found that when horses were fed cured horsetail equal in amount to not more than one-fourth of their coarse fodder ration, symptoms of poisoning were noticed, and if the feeding was continued the horses died. The symptoms of poisoning were less noticeable with young than with old horses, and also when a liberal grain ration was supplied. It was also observed that the green plant was less harmful than the dry, possibly owing to the fact that green fodder is somewhat laxative.

Feeds which are ordinarily wholesome may under certain conditions be harmful. Thus, there is a widespread and apparently justifiable prejudice against moldy or decomposing feeding stuffs. Experiments carried on at the Kansas and Indiana stations showed that the continued feeding of moldy corn induced intestinal and nervous disorders of a serious nature. It is a matter of common observation that feed which has been wet will ferment or sour readily and cause intestinal disorders. This has to be guarded against especially in warm climates.

Plants which are ordinarily wholesome may become harmful if infested with ergot. The effect of ergot on horses has been studied by the Iowa, Kansas, and Montana stations and others. It is generally conceded that the presence of ergot is a cause of rheumatism. Some feeds which are regarded as wholesome when properly fed may sometimes prove injurious if fed for a long time or in improper quantities. Thus, millet hay, in many sections of the Western United States, is believed to cause the so-called millet disease of horses. This question was studied by the North Dakota Station. It was found that long-continued feeding of millet hay caused lameness and other symptoms of poisoning, but the specific cause to which the dangerous properties of millet are due was not learned, tho later work at the station indicates that it is a glucosid.

Ground and Unground Feed

Opinions differ as regards the advantages of grinding grain. For horses which are out of the stable during the day and worked hard, it is quite generally believed that all grains, with the possible exception of oats, should be ground, and for those at extremely hard work, all grain should be ground and mixed with chaffed hay. For idle horses oats or grain should not be ground, nor should hay or straw be chaffed. In other words, provided the animals have time to masticate their ration thoroly, grinding is not necessary. When this is not the case, grinding takes the place of thoro mastication to some extent, and increases the assimilation of the ration.

When whole oats were compared with ground wheat and bran at the North Dakota Station, the horses fed the former ration ate somewhat more and showed a slight loss in weight, while doing a little less work than those fed the ground grain. At the Utah Station, tests of the comparative merits of ground and unground corn, oats, and wheat fed under different experimental conditions indicated that the ground and unground grains were equally satisfactory. When whole and ground oats, corn, and barley were compared for colts at the Iowa Station, somewhat larger gains were made on the ground feed.

Watering Horses

In general, a horse will drink from 50 pounds or less to 65 pounds per day, tho under the influence of warm weather or hard work the amount may range from 85 to 110 pounds or over. In some experiments in the British army it was found that when allowed to choose, horses drank about one-fourth of their daily allowance in the morning and not far from three-eights at noon and about the same proportion at night.

In connection with a number of the tests at the experiment stations in the United States the amount of water consumed has been recorded. At the New Hampshire Station, on a ration of different grain mixtures, with timothy hay and corn fodder, the quantity of water varies from 71 to 90 pounds of water per head per day, both the ration consumed and the amount of work performed influencing the quantity of water drunk, altho the individuality of the horse had the most marked effect. At the Utah Station it was found that larger amounts were consumed on alfalfa hay with oats than on timothy hay, the greater consumption of water on the former

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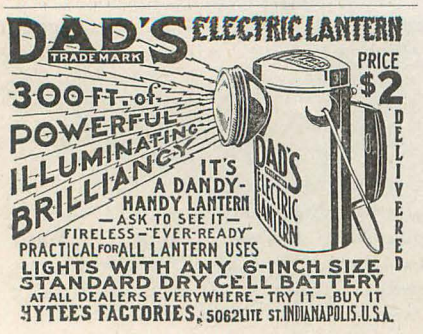
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ration inducing a greater elimination by the kidneys; but so far as could be observed this was not attended by any bad results, nor was it found inconvenient.

A pair of mules, at the Oklahoma Station, during the hot summer weather, drank 113 pounds of water per head daily, and on one day 175 pounds. In another test, at moderate work, the amount recorded was 107 pounds. In these tests the grain ration consisted of Kafir corn, maize, oats, and bran.

The proper time to water horses is a matter concerning which opinions differ. Many feeders believe that they should be watered before feeding, while others are equally certain that feeding should precede watering.

Summary

Some of the principal deductions noted in this bulletin follow, the conclusions which have been drawn for horses applying with equal force to other animals of the same group, such as asses and mules.

Horses, like other animals, require a definite amount of nutrients and energy per 1,000 pounds live weight for maintenance, and an extra amount, chiefly energy-yielding nutrients, for muscular work, the amount being proportional to the character and amount of work performed.

The amount of nutrients required increases with the amount of work done and with increased speed. More energy is required for climbing an incline than for traveling on a level. In descending an incline of less than 5 degrees, 45 minutes, less energy is required than in traveling on a level. If the incline is greater than 5 degrees 45 minutes, more energy is expended (to prevent too rapid descent) than in walking on a level.

The ration should consist of concentrated and coarse feeds. The ratio by weight of coarse fodder or bulky feed to concentrated feed in the ordinary ration has been found to be about 1:1. Crude fiber may perhaps be fairly considered as the characteristic constituent of coarse fodder. The ratio of crude fiber to protein in the average of a large number of American rations has been found to be about 2:1.

Theoretically at least any sufficient and rational mixture of wholesome grains, by-products, roots, and forage crops, green and cured, may be used to make up a ration, tho there is a very general prejudice in favor of oats and hay, corn and hay or corn fodder, and barley and hay (frequently that made from cereal grains), the first-named ration being perhaps that most commonly regarded as satisfactory for horses. A corn ration is very commonly fed in the middle West and Southern United States—that is, in the corn-producing belt. The barley ration is quite characteristic of the Pacific coast region. In the semiarid regions of the United States Kafir corn and alfalfa have proved to be of great value, owing to their drought-resisting qualities. Both crops have been found useful for horse feeding. Of the two alfalfa has been used much more commonly, and has given very satisfactory results.

Investigations have shown that it is often best to modify a ration, for instance, by substituting corn wholly or in part for oats, so that while the horses remain in good condition, the cost of the ration is diminished. Where large numbers of horses are fed this is often a matter of considerable importance.

Generally speaking, horses digest their feed, and especially the nitrogen-free extract and crude fiber in it, less thoroly than ruminants.

Horses require a considerable amount of water daily, the quantity varying with different seasons of the year, the amount of work performed, etc. The time of watering, whether before or after feeding, is a matter of little importance, and, generally speaking, may be regulated to suit the convenience of the feeder. Horses become used to either method of watering, and irregularily should be avoided, as sudden changes are apt to prove disturbing.

Judging by the average results, representing the practice of a large number of successful American feeders, and also the results of many tests at the experiment stations in different parts of the United States, horses with light work consume on an average a ration furnishing per day .99 pound of digestible protein and 14,890 carories of energy per 1,000 pounds live weight. Similar values for horses at moderate work are 1.49 pounds digestible protein and 22,710 calories. It is believed that for horses at severe work larger amounts are required. Generally speaking, these average values are less than those called for by the commonly accepted German feeding standards for horses performing the same amount of work, yet from what is known regarding the American horses it seems fair to say that they were well fed.

CARE OF THE HORSE—WEANING THE FOAL

If the foal has been properly cared for during the summer months, being fed a little grain in addition to the roughage and dam's milk, weaning

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time will be merely a matter of separation.

The time of weaning will vary with conditions, but the best rule is to allow it five to seven months as the work of the mare varies from heavy to light, but if possible don't wean the foal before four months.

The important stage of the youngster's life is now at hand. Separation from the dam must be complete to be satisfactory, and the colt kept in a small lot fenced either with boards or poles. While all colts may not run into the wire, the one that tangles itself in the wire is invariably the most valuable.

The weaning that is most successfully accomplished is the one thru which the colt suffers the least setback in growth. If at weaning time the colt can eat its full allowance of grain, 2 to 3 pounds of oats or one and one-half pounds of oats and two pounds of ground barley mixed together, with plenty of clean alfalfa or timothy hay, it will continue growing and cease to fret for its dam.

Weaning time is the best time to gentle the youngsters. Catch them, handle carefully, halter them and teach them to lead. Also inspect their feet and gentle them in regard to handling the feet. If colts are carefully handled a few times each day for several days, it will greatly simplify the breaking later on—R. Bentley, Colorado, Agricultural College, Fort Collins, Colo.

TO PREVENT WASTE

A good way to prevent waste on the fields from which the corn has been cut and hauled to the silo is to turn in the cattle, sheep and hogs. This was done on the North Dakota Experiment Station farm this fall. These livestock cleaned up everything. The stock was herded on the fields that were not fenced. In this way several days feed was secured for a larger number of stock. If the stock had not been turned in this feed would have been wasted.



Poultry Department



FALL CARE OF POULTRY
Michael K. Boyer

Uncle Isaac Felch is known as the father of poultry culture in America. True, poultry has been raised years and years before he was born, but it remained for Mr. Felch to bring the industry to the front, and make of it a business proposition.

In a letter to the writer, Mr. Felch very aptly says:

"Of all the year when flocks need the most care they get the least. From June to December is the molting season, when the strain upon the system is severe, when the eggs are growing smaller, their color faded and the number less, the old coat is falling off and a new coat of feathers pushing out. The very time when they should have the best of care from our hands, as a rule with mankind in general, they are left to shift for themselves. Often are these flocks confined to bare yards with nothing but corn and water—a prison fare. Suppose you try to put yourself in their place? Shut yourself up in a yard with no shade, with the burning sun pouring down upon you, and your dish bread and water. If you do, you can perhaps appreciate the condition of your flock deprived of shade and the comforts that are necessary for fitting them properly for a second season of profitable work for you. If you have not the natural shade, make artificial provision at once. If your birds are upon a bare yard deprived of the insect and worm life they could glean from the fields, then supply a meat diet that is full 15 per cent meat to 25 per cent vegetables and 60 per cent grain. That grain ration, during the hot months especially, to be composed of wheat, oats and barley, or use good sweet wheat-bran with the meat, scalded, instead of the whole wheat. Do not forget for a single day to have their boxes well filled with crushed charcoal and grit, which are virtually feed for the plumage. And, if within your reach, feed at the rate of 10 grains per fowl, two or three times a week, of "nutritive salts." Then you may in six weeks see these flocks renew their youth to look as fine in color, and more robust in status, as when you so much admired them when they won prizes for you in the cockerel and pullet classes in your exhibitions last year. Now the question is, are you doing this? If not, commence at once to be just to your flocks that they may have a chance to repay your care with profit."

Mr. Felch could have gone farther. He could have pointed out the fact that during molting a fowl will show what weakness it has, and if not properly cared for will soon be among the missing. Molting season seems to be a reckoning day with poultry, and it is a time when close attention must be paid.

Comparatively speaking, there is not much profit in hens in the fall of the year, from the fact that the egg crop has so fallen off that there is scarcely enough income to meet the running expenses. It is then when the unthinking poulterer is apt to be neglectful, and it is just the time when he should be spurred on with the fact that hens well cared for in molt will be stronger and better layers after they are thru with the ordeal. This is especially so with the older hens that have delayed their molt to late in fall; some two and three-year-olds will be right in the midst of it when winter sets in.

An occasional feed of sunflower seed, and linseed meal daily in the morning mash (say five per cent) will be found very beneficial. The addition of a good reliable condition powder, or a little sulphur to the mash two or three times a week during dry weather, is also good. The food must be nutritious. Little if any corn should be given. If a grass range is afforded, the fowls will gather much needed food. If not, they should be supplied with such greens as cut grass, cabbage, carrot tops, scalded clover hay, etc.

Remember that the fowls must be well fed, but not overfed.

That the food should be rich in nitrogen.

That a molting hen is readily overfattened.

That there should be a variety of food.

That the males should be separated from the females.

That molting is a natural process and not a disease.

That it takes about 100 days for a hen to molt.

That strict cleanliness in the henhouse must be observed.

That after the third year the molting becomes delayed.

That it is cruel to pull out feathers to assist molting.

That the early molting hens had best be removed from the late ones.

That a pullet hatched in February or March will go into molt in the fall.

That unless the material is in the food for making new feathers, the old ones will not shed.

That at this season, if cofined, molting fowls are apt to contract the vice of pulling feathers.

When a hen receives a large supply of carbonaceous food, she increases her fat without supplying the necessary elements needed in the renewal of the feathers, and there is a general wast-

ing away, inactivity of the bird, and death. When no stimulant is given, the shafts of the new feathers seem to stick on too long, not splitting open freely. If the molt is late in the season, see that the fowls are kept warm, especially during the night. When birds droop too much and seem on the decline, give two or three one-grain doses of calomel, allowing a day to intervene between each dose.

The developing pullet must also have good care. If rightly grown they will be money-makers this winter. They should not be crowded in flocks, and should be kept as tame as possible. It is likewise important that they be active; be made to do considerable scratching for food. While overfeeding will stunt their growth, underfeeding will have equally as disastrous an effect upon them. Butcher the runt, as it will ever be unsatisfactory. Never yard pullets and hens in the same flock, and as soon as the cockerels begin to crow and notice the pullets, they should be separated, and the former fed more heavily for development.

The early laying pullets take the place of the molting hens. Never breed a pullet under nine months of age—a year old is better. Pullets need not be mated for egg-production. When nearing the laying stage they are readily overfattened, and consequently must be judiciously fed on nitrogenous food.

Free range is one of the best ways for developing growing stock. Moving pullets about to various runs while they are maturing, is apt to check egg production.

Roosts for the Asiatics

The heavy breeds, such as Brahmas and Cochins, should not be compelled to roost more than a foot above ground, as they are unable to fly high. Some poultrymen prefer having them roost on the floor, which they heavily bed with hay or straw. But in such cases care must be taken that there are no draughts. This is often the case when doors do not fit tightly.

"Rattling in the Throat"

"Rattling in the throat" is a bronchial affection, the result of a cold. All afflicted fowls should be separated from the flock and given a drop of tincture of aconite in a half teaspoonful of water. In bad cases repeat every hour for five hours, and then once in three hours. Give a hot mash of at least one-half bran, the other half in middlings or bread crumbs. Another good treatment is to slightly acidulate the drinking water with 10 drops each of sulphuric and nitric acid. In place of the aconite a teaspoonful of glycerine, and about two drops of whiskey added, will often allay the irritation. Repeat daily for about a week.

Feather Pulling

Feather pulling is a vice due to overcrowding the flock. I do not believe there is anything that will prevent the acquirement of the habit. Some claim it is lack of salt in the food. There may be some truth in that opinion. At any rate, it is worth a trial. But care must be taken not to use too much salt. Guage the amount "to suit the taste," as cooks would say.

Teasing a rooster until he will resent it may be lots of fun for a while, but we know such cases to become dangerous. It is far more interesting to have them so tame that one can caress them.

System and regularity are important points with the successful poulterer.

The more one looks into the egg-proposition, the more clear becomes the fact that the only way to make a profit is to have the hens comfortable.

It is gratifying to note that annually the number of farmers that are supplanting their mongrel stock with thoroughbreds is increasing.

The farmer is so situated that he can give poultry the best of attention at a very small cost, and yet the farmer, as a rule, is the most negligent in this matter.

The introduction of fresh blood frequently not only keeps up the stamina, health and vigor of the stock, but it also enables them to resist sickness and sudden changes of weather much better than fowls closely inbred, or fowls not bred to any degree of constitutional excellence, or selected for establishing any permanent quality.

Unless the winter quarters are warm and sunny, with sanitary surroundings, we cannot expect a very large egg yield, no matter how particular we may be regarding the bill of fare.

Standard-bred does not necessarily imply egg-bred. That's different.

There is very little difference between mongrelism in stock and fogyism in ideas.

If poultry breeders would pay more attention to develop utility, there would be more demand for poultry, and more people would become interested.

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O. A. Barton, Valley City, N. D.

School and Home



Miss Ura Leader,
Ruraldale, N. D.
Dear Miss Leader:

The loss due to plant diseases amounts to a vast amount each season. While this loss cannot be entirely eliminated, it may to a very large degree be prevented. Fortunately most of the diseases of plants may be controlled by proper systems of crop management.

It is necessary to know something of the life history of the different diseases in order to know how to proceed in their control. The diseases about which I am to write belong to the plant kingdom. They have life histories somewhat similar to all plants. They multiply from "spores" or seeds. These spores germinate, and the new plant develops.

All these plant diseases are parasites; that is, they live and get their supply of food from some higher form of plant life. None of them manufacture their own food as do our food crops. Most of the diseases live upon but one or two kinds of plants.

The plants upon which they live are called "host plants." But the parasites are uninvited guests. Their growth and development is at the expense of the host. It is like a poor relation inviting himself to your house for free food and free shelter for six months or a year.

For our purposes, I think it will be best to group the different plant diseases according to their methods of infection. There are several which infect the host plant only when the spores come in contact with the seed. There are several which spend their resting stage in the soil. There are still others which spread thru the air.

The diseases which are carried on the seed are prevented by disinfection of the seed to be planted. The smuts of wheat, oats, barley, and the sorghums may be prevented by seed treatment. Different methods are used, but the best is the treatment with a solution of formalin.

One pound or pint of formalin to forty-five or fifty gallons of water makes the best strength of solution. The treatment may be made in any convenient way, so long as every seed is moistened. After the seed is disinfected there should be no reinfection thru smutty sacks, drills or bins. Formalin may be purchased from any druggist.

The diseases which live in the soil are controlled by crop rotation and clean farming. Much can also be done by growing those crops which are resistant to the disease. Crop rotation offers one of the best methods of control, since each disease has a particular host plant. Flax wilt will not grow on wheat.

The diseases which spread thru the air and which may infect the host plant at any place are controlled by growing resistant varieties, clean farming, and crop rotation. The grain rusts, corn smut and many other common diseases belong to this class.

The different diseases decrease the yield of the crop which they infest much more than appearances indicate. When smut is found in a grain field, there will be many plants affected even where the smut does not show. This but emphasizes the importance of disease control.

There is still another way in which we might group the plant diseases. Different diseases infect different parts of the plant. Certain parasites attack the roots, others attack the stems and leaves, and still others attack the fruiting portion.

The damage done in each of these cases is best understood when one knows the function which each part of the plant performs. The minerals used by the plant in its growth are taken up thru the roots in solution with water. The nitrogen compounds are also taken from the soil.

All the plant food is manufactured in the leaves of the plant. The growth of a plant is almost in direct proportion to the leaf area. This of course means healthy leaf area. Finally most of the food manufactured by plants is stored up in the fruiting portion or the seeds. This statement applies mainly to the cereal crops.

If the roots are destroyed in any way the many important elements needed by the plant cannot be absorbed. The plant withers and dies. If the leaves are destroyed no plant food can be built up. Hence it is necessary to keep the plant in a good

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healthy condition in order for it to perform its function.

Aside from seed treatment, many of the horticultural crops may be protected from disease by sprays. This is true also of potatoes. But only those diseases which attack the leaves and stems may be so controlled.

Spraying is not feasible with most farm crops. If such crops are to be protected it must be by rotation of crops, clean farming and the growing of resistant varieties.

Dairying is becoming quite an important industry in North Dakota. It deserves a more important place than it now occupies. I do not think that diarying will correct all the bad practices of the farm, nor does it insure success. It depends mostly on the one who takes up the work.

If a man dislikes a dairy cow, or does not appreciate good cows, or tries to get the milk by pounding it out with a stool, he better not try dairying. I think that among the most important things in dairying are: good cows well cared for and fed, kindly and gently treated, and clean and sanitary methods of handling the dairy products.

Personally, I have never been very favorably impressed with the quality of the dairy products which we have been able to buy in this state. The butter seems to have a bad flavor, too frequently. In fact, it is very evident that these products are not generally of as high quality as they might be.

The cows of North Dakota give just as good milk, and it is just as clean as that produced by cows of other states. In fact, many claim that the dairy products from our rich feeds are superior to those produced in many parts of the country. The trouble must be in the handling of the product.

The milk or cream is not hauled to the market often enough. It is impossible to make good butter from a mixture of fresh and over-ripe cream. I suspect that in many cases that the dairy utensils are not always kept absolutely clean. Perhaps sometimes the milk has been left exposed where there are odors of different kinds.

Milk will absorb odors very rapidly. It makes an excellent medium for the growth of bacteria. I suppose that you are familiar with the fact that the souring of milk is due to bacteria. Now there are many kinds of bacteria, and the flavor of the product depends on the kind of bacteria present.

Some bacteria cause putrefaction or decay. These are found in dirty milk pails and other dairy utensils. Some make the milk stringy. But there is always present a desirable kind which ripens the cream. Cleanliness favors the development of this kind.

The most important thing in producing a good dairy product is to have everything absolutely clean. In the summer time the milk or cream should be marketed frequently. The milk should be cooled immediately after milking. It should be kept at a comparatively low temperature.

Forage production is more certain than grain production. There is no better way to dispose of feed crops than by feeding them to good dairy cows. The dairy industry offers great opportunities. And one of the most important things in dairying is cleanliness.

O. O. CHURCHILL.

A REVIVAL OF SKATING

A Popular Sport This Winter, Indoors and Out

The Pantalette Petticoat

It looks just now as if all the world would go on skates this winter just as all the world took up the dance craze last winter. Our Hippodrome is displaying some wonderfully attractive skating notions in its present show, and many of the glass-enclosed roof gardens have taken up the fad and are giving a skating cabaret instead of the dancing cabaret. The sport is wholesome and appeals to young and old.

Piquant Skating Costumes

Among the costumes, particularly youthful and chic, are the box coats, worn with short flaring skirts and tasseled Tam-o'-Shanters. The Norfolk model too, is much in favor, and the sweater in some popular vivid tone combined with skirt of corduroy or tweed, is a prime favorite. Each of these suits allows the ease of movement so necessary to this sport, and the grace of line so much sought after in all costumes.

Pantalette Costume

Fabrics favored for skating suits are tweed, in its various mixtures of soft browns, reds, and grays; sweater cloth, warmly and vividly colored; lamb's wool, so light and warm; and numberless novelty wools and other fabrics favored for sports use. Corduroy should not be omitted; in wide and narrow wale, it is being used for both coat and skirt. The colors are pleasing and of course the wearing qualities of corduroy are too well known and appreciated to require mentioning. Corduroy lends itself particularly well to the belted Norfolk models for golfing and other out-of-door sports, as well as for skating.

Coats Are Unlined

The belted Norfolk, the sweater coat, and the box model, now worn for sports are all of them unlined unless it be perhaps a shoulder yoke of satin or heavy silk as a sort of body foundation. This fact makes the fashioning of them at home a much simpler matter. Sport clothes, being



more or less of a luxury, are of necessity expensive when purchased ready made; materials however may be purchased and the garment made at home very reasonably. A particularly effective suit seen recently was developed in a soft sage green English coating; it was reversible, the underside being checked in soft blues, greens, reds and browns. Collar, wide cuffs, lapels and belt were made with the check outside; the coat was fastened with large brown leather buttons; a line of the buttons extended down the front of the skirt as well, adding a smart bit of trimming. Pockets are a great convenience for sports wear, and coats and suits this winter are well supplied. The various styles of collars too, so much a part of the new coats, are particularly adapted to real out-of-door wear. The wide chin collar, coming well up about the throat and ears is becoming and wonderfully warm and practical. The throw scarf of the same material as the coat, or of a fur fabric, often attached directly to the coat itself, is a practical and comfortable notion; what could be more ideal for skating than the wide muff cuff, into which one may slip the hands and remove them instantly if necessary, doing away entirely with the danger of losing a valuable muff, and also the inconvenience of carrying one when the hands may be put to better use.

Pantalettes for Skating

Few of us but will appreciate the practical side of the pantalette petticoat for skating and out-of-door wear. These pantalettes are generally made of heavy satin in the same tone as the suit, or skirt, and for skating, dancing and the numerous other purposes for which they are equally well suited, are trimmed with fur; then again the pantalettes are of silk, satin, or sateen, the lower part being faced with the same material as the suit. A dark blue corduroy skirt combined with a beautifully colored silk sweater with tasseled sash ends, and fur-trimmed collar, worn over dark blue satin pantalettes edged with dull gold braid, was unusually chic. Just a glimpse is caught now and then of these fascinating accessories, as the wearer flashes by on her shining skates, or dips in the dance.

The Natty Tam-o'-Shanter

Velvet, fur, fur-cloth, lamb's wool and the material of the suit are all used effectively in these charming little caps. Some are made Mandarin fashion with just a round ball of fur directly on the top by way of trimming; others have a hanging tassel of silk, and still others are woven with the very long, tasseled end of the Tyrolean skater's cap. Some of these are in black, but the majority are in a bright shade, orange, emerald green, royal blue, scarlet, or purple. The lamb's wool caps in these bright colors are particularly effective.

A FEW THINGS TO DO TO BETTER LIVESTOCK

1. Treat cows gently and avoid excitement.

2. Be regular in time of milking.

3. Keep stables clean, well-lighted and ventilated.

4. Weigh the milk of each cow at milking time.

5. Get your neighbor to share with you in owning a Babcock Milk Tester, and test the product of each cow.

6. Discard the animals which have failed at the end of the year to pay for their keep.

7. Breed your cows to a pure-bred, registered dairy bull from a family having large and profitable production of butter fat.

8. Raise well the heifer calves from cows, which for one or more generations, have made large and profitable productions of milk and butter fat.

9. Breed heifers to drop their first calves at 24 to 30 months of age. Give cows 6 to 8 weeks' rest between lactation periods.

10. Join a dairy cattle breeders' association. It will help you keep post-

J. M. Hanson-Bennett
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ed and in touch with the best and most modern ways of managing your dairy herd.—George C. Humphrey, College of Agriculture, University of Wisconsin.

WINTER PROTECTION FOR PLANTS

Protection in the winter makes possible growing many desirable plants and shrubs that are not hardy when exposed. H. O. Werner, of the North Dakota Experiment Station gives the following pointers on winter protection.

"The extreme cold and the drying winds of late winter, are the two most trying features on plants of all kinds, in the northwest. To pass thru the winter satisfactorily, the plant tissues should not be in want of any moisture and all woody plants should have the young growth well-ripened when winter sets in. If the plants—especially trees—have suffered for lack of moisture during the end of the growing season and if the soil does not contain the usual amount of water, it will be a good thing to give them a liberal watering before the ground freezes. If cultivation has been practiced during the summer in the wood lot or shelter belt it should be kept up for the rest of the season so as to conserve all the soil moisture. A mulch of manure or straw about 6 inches deep spread around the trees and especially shrubs and bush fruits soon after the ground is frozen, will afford an excellent protection. Hardy perennials such as peonies, phlox, iris, etc., are also best given a deep mulch. Most of the mulch should be removed in spring about the time growth starts and what is left of the mulch is worked into the soil.

It will often pay to use protective measures for valuable evergreen specimens, that frequently suffer from the stiff, drying winds of late winter. The branches are drawn together by rope or cord wound around the tree and the tree is then covered with a thin layer of straw which is held in place by burlap or cord.

Strawberry beds should be given a mulch of straw that will be about two inches deep after the straw has settled. In spring, when danger of frost is past, the straw should be loosely raked off the strawberry rows and left between the rows as a summer mulch. Be sure that the straw is free from weed seeds.

OLEOMARGARINE FRAUD
Richard Hamilton Byrd

Widespread violations of the oleomargarine law, extending over the entire thirteen years that the present law has been on the statute books, have resulted in a loss, estimated by the Treasury Department, of at least $27,000,000 in stamp and special taxes. Investigation made by the Secretary of the Treasury show that since 1902 more than 200,000,000 pounds of colored oleo have been manufactured and fraudulently sold as uncolored oleomargarine or as butter. It is believed that a great proportion of this product reached consumers as butter.

The offenders resorted to various means to deceive the Government and the public. The methods employed by fraudulent oleomargarine manufacturers to color their product ware to purchase palm oil and by circuitous routes ship it to the factory, where it was put into oleomargarine in connection with other ingredients used to mask this coloring agent from chemical detection when it was placed on the market under tax paid stamps at one-fourth cent per pound required for uncolored oleo, when it was subject to tax at ten cents a pound. Manufacturers of butter were discovered to have been engaged in the manufacture of a product by compounding country or ladle butter with oleomargarine oil, coloring the resulting product, which brought it within the classification of oleo subject to the 10-cent tax. This product was placed on the market as butter.

The Commissioner of Internal Revenue has already recovered and deposited in the Treasury $851,000 from offenders with the prospect of further very large collections. Forty-two violators have been convicted since January 1, 1915, 29 of whom have been sentenced to terms in prison ranging from 30 days to three and one-half years. Total fines of $148,000 have been imposed. Ten other violators of the law are under indictment awaiting trial.

RAISING PIGS

Raising pigs is the big thing with the contestants in the Boys' and Girls' Pork Production Contest. Milton and Mildred Pierce of Ellendale are both in the contest. Their litters started even with 12 Duroc Jerseys, but one of Mildred's died. The total weight of the litters have remained about equal.

The pigs are on alfalfa, each lot having a little pasture. When it was warm they dug a wallow for their pigs and carried water from the house to fill it.

They have taken a great deal of care to provide their pigs with both comfort and the most nourishing ration. They are feeding according to the directions sent out by the North Dakota Experiment Station. The pigs are already a good size. Their daily gains are watched with a good deal of interest. In fact, it is the most important thing in the lives of this boy and girl just now. Every pound gained brings them that much nearer winning one of the big prizes in the contest.

What Do You Think of This Land?

The Mohall Security Bank has just sent me returns of this year's crop of N. E. ¼ 20-160-84 being Clay Township, Renville Co., North Dakota, rented to Edward Fitzgerald, on my one-third share, he furnishing seed, viz:

Wheat	1423 bu.
Oats	623 bu.
Barley	401 bu.
Total	2447 bu.

Besides the quarter the above grain was raised on, I offer for sale S. E. ¼ of Sec. 1 in same township. Also E. ½ Sec. 27 162-83, being in Hoffman Township, Bottineau Co., and about twelve miles from the farm located in Sec. 1, Clay Township, all tributary to Mohall, the county seat of Renville County.

From the top of one of the elevators at Truro, N. D., being half mile from the quarter I offer for sale in Sec. 1, Clay Township, you can see and count 27 substantially erected grain elevators. I mention this to show that this is a very productive section of country.

The above mentioned descriptions contains one section of land which I offer for sale at $20,000, on terms. Any parties interested may address

M. O. HALL, 3320-30th St., San Diego, California.

TUBERCULIN TESTED?

The statement "tuberculin tested" is often made. Just what does it mean? Tuberculosis is quite common among cattle, and cattle furnish milk and are also used for food. This means that there is a big chance of milk from tuberculous cows containing the tuberculosis germ.

Tuberculosis can usually not be detected by merely examining an animal. It may appear healthy and yet be affected. Such an animal is dangerous. It may be spreading the tuberculosis germs, so that other animals are liable to take the disease and it may leave tuberculosis germs in the food products from it.

A method has been devised for detecting tuberculosis in cattle. It is called the tuberculin test. The tuberculin is made by sterilizing, filtering and concentrating the liquids in which tuberculosis germs have been allowed to grow. It contains no germs. Hence when it is injected into an animal it can not produce the disease, but it does raise the animal's temperature if it has tuberculosis. If the animal is free from tuberculosis its temperature is not affected.

In making the test the animal's temperature is usually taken four times at two-hour intervals before the tuberculin is injected and the temperatures are again taken five or six times at two-hour intervals, beginning ten hours after the injection. A study of these temperatures indicates whether the animal has tuberculosis or not. The test is accurate 97 times out of a hundred. When the animal is badly diseased it sometimes fails to give the rise in temperatures that indicates tuberculosis. In such cases, however, it is usually possible to detect that something is wrong by the appearance of the animal. An animal that has tuberculosis and is tested will often not react to a second test inside of six weeks.

By using the tuberculin test dairymen and breeders can clean out the tuberculous animals and then when securing more cattle buy them subject to the test.

The federal government will not allow any cattle to be shipped in from foreign countries unless they have first been tuberculin tested and found free from the disease. The federal law also prevents the shipment of cattle from one state to another when they are affected with the disease or suspected of being so. The State of North Dakota, thru the Livestock Sanitary Board, is doing all it can to assist its farmers in getting rid of tuberculosis.

It is one of the most treacherous of diseases, is easily spread and does not make its presence known before it has a good foothold on its victim.

The tuberculin test makes it possible to detect it in cattle and thru the investigational work at the North Dakota Experiment Station a tuberculin test has also been worked out whereby tuberculosis can be detected in chickens. This test has revealed that tuberculosis is quite common among chickens.

TO CLEAN A SEWING MACHINE

If your sewing machine is giving trouble, try the following suggestions and you will be saved considerable annoyance and probably the expense of a repair man. If the stitch is uneven and the needle seems to catch as it passes up and down the plate, take off the plate and remove any lint that may have accumulated under it. Replace the place and give the machine a kerosene-oil bath as follows: Take out the thread, fill all the oil holes with kerosene, and run the machine fast for a few minutes. Leave it for several hours until the kerosene has evaporated and the dirt been cut out by the oil. Then apply good machine oil.

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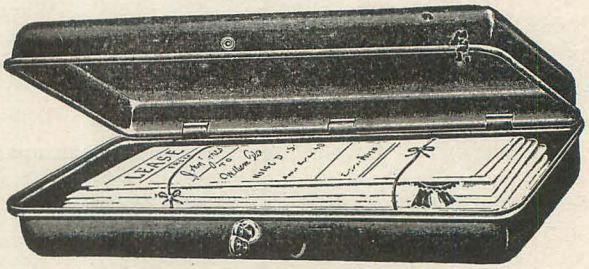
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Household Hints

By Aunt Maggie

If by accident hot lard is spilled on the floor, dash cold water on the spot immediately, as this prevents the grease from soaking into the wood.

Instead of discarding old linen collars, soak them in water until soft, cut off the stitching and tear them into strips to be used for bandaging cuts and burns.

When mixing mustard for table use, add to each scant tablespoonful of mustard one teaspoonful of melted butter, and one teaspoonful of syrup. The result is similar to the best French mustard.

One teaspoonful of ammonia in a little suds is excellent for cleaning chased and plain silver, nickel-plate, etc. A small amount in clear water will cleanse mirrors and glassware of all kinds. Use it in water with ordinary soap when washing painted woodwork. Dip hairbrushes up and down in ammonia and water; rinse and dry with the bristles down. It will clean and bleach clothes readily if added to the boiling water.

If in making gravy one adds a "thimbleful" of milk, a suspicion of celery salt and a pinch of sugar it will result in a much more savory dish.

For pretty Christmas bookmarks make a strip of filet-crochet with the word "Mizpah," "Holy Bible" or similar appropriate word. A cross-stitch alphabet will enable you to make any letters desired. Use a strip of ribbon the same width for a back or crochet a narrow border with openings thru which to a narrow ribbon, fiinshed with a little bow at one corner.

Another simple but dainty and useful gift is a pair of skirt hangers. Crochet a short "strap" in any substantial stitch, not too open. Attach a large safety pin to one end by crocheting over the horizontal bar and attach an inch bone or celluloid ring to the other in the same manner.

Pretty neck-ties are made by crocheting the tie in afghan stitch and working a design or initial in cross-stitch. The tie may be made in plain knitting too and decorated in the same way, but knitting is more likely to curl.

I use two thicknesses of ordinary white string as a padding for embroidered scallops, holding it in place as I work, thus saving time and padding-cotton. To prevent the scallops fraying I buttonhole the edge, after completing the usual buttonholing, using one strand of ball floss; this makes a perfect finish.

To rip seams that have been sewed on the machine is a tiresome task. You will find the following plan economical in both time and thread. Cut your lower thread every half inch, using small-pointed scissors. This leaves the upper thread free to be pulled out very easily, like the string in a flour-sack, and it can then be used for basting. No short pieces of thread will stay in the seam, as is apt to be the case when the ripping is done in the ordinary way.

A friend has used some embroidered stock collars, now out of style, in making some very pretty bonnets for babies. Gather a large circle of lawn or other fine material for the back, letting the ribbon come across the back of the neck to the front and form rosettes and ties; use the collar for the straight piece across the front.

USEFUL BLOTTER

Place thick blotting paper in a strong solution of oxalic acid. When the paper has absorbed all it can hold, remove and dry. Keep blotter in desk. Use it to take up an unfortunate blot while the ink is wet, and no stain will show.

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ELLENDALE BRANCH
ELLENDALE, NORTH DAKOTA

Seasonable Receipts

Edited by Mrs. Sadie Baird.

ROAST TURKEY

For the stuffing grate a loaf of stale bread, and put the crusts in water to soften, after which they should be added to the grated bread. The amount used corresponds with the size of the turkey. To one loaf add a piece of butter the size of a large egg and to this add one-half tablespoonful of sweet marjoram, a little chopped parsley and an onion minced very fine. Add salt and pepper, bind them together with one egg. Take a handful of the stuffing, squeeze it hard and stuff the inside, commencing at the wings and stuffing it very hard until it assumes its natural shape, after which the thighs should be treated in the same manner. Sew up the opening and bind around with a tape to keep it in perfect shape, and bake for three hours.

FRUIT CAKE

Old English recipe. One and one-half pounds butter, two pounds brown sugar (roll if lumpy) sixteen eggs, one-half ounce cinnamon, two nutmegs, two pounds flour, one teaspoonful soda, one-half cup cream. Soften butter to a cream, add sugar, then eggs beaten separately, then flour, soda, cream, and lastly the fruit. Mix well and bake about four hours. Line pan with paper, and set dish in water in oven to prevent burning.

Fruit for cake: two pounds raisins, one and one-half pound currants, one-half pound citron, one-quarter pound orange peel, one-half pound shelled almonds.

GOOD STEAM PUDDING

One-half cupful sugar, one-half cupful melted butter, one-half cupful molasses, one-half cupful hot water, one egg and one tablespoonful vinegar. One teaspoonful soda dissolved in hot water, one-half teaspoonful cinnamon, one-half teaspoonful cloves, two cupfuls flour and one-half cupful raisins. Steam one and one-quarter hours.

PUMPKIN OR SQUASH PIE

Take one cup strained pumpkin or one egg, one-half cupful sugar, two spoonfuls molasses, salt, ginger, nutmeg, cinnamon, each one-half spoonful, one cupful milk. Add two or three spoonfuls cream if you can. Mix thoroly and bake with one crust. Try by cutting knife in and when done it will come out clear.

CHRISTMAS JELLY

Make small individual molds of gelatine. Fill the center with diced pineapple and top with a spoonful of whipped cream. Arrange a few bits of pineapple around the dish and garnish with holly berries.

CRANBERRY TARTS

Roll pie dough one-eighth of an inch thick and cut in rounds the correct size to cover inverted circular tins. Cover the tins with the dough, prick several times with a fork and bake until a delicate brown. Fill with cranberry sauce. Any other fruit sauce may be substituted.

STUFFING

Stuffing left from chicken or turkey may be sliced thin, browned in the oven, and served on toast.

SCALLOPED CHICKEN OR TURKEY

Place a layer of shredded chicken or turkey in the bottom of a buttered baking dish, then a layer of sliced raw potatoes, another of the fowl, and so on, seasoning to taste and dotting with tiny pieces of butter. The last layer should be about an inch from the top of the dish. Sprinkle with cracker crumbs which has been mixed with salt and pepper, and dot with butter. Over the whole pour milk or the left over gravy, and bake till potatoes are done.

CHICKEN IN ASPIC

Cold chicken cut in small pieces; one sprig parsley; two cloves; one and one-half teaspoonfuls gelatine; four cupfuls clear chicken broth; one-half a bay leaf; one slice lemon; few dried celery leaves; salt.

The chicken broth should stand over night so that all fat can be removed. In the morning add seasonings and boil for fifteen minutes. Strain and add gelatine, which has been soaked in three tablespoonfuls of cold water, to three cupfuls of the broth. When the jelly has cooled pour a little into a mold and when nearly firm lay in the slices of chicken. Let stand until firm and then pour in the rest of the jelly very gently. The remainder of the jelly should be kept where it will stay liquid, but not warm, until ready to use. Set in ice-box and when firm turn out on a platter and garnish with parsley.

WHEN MIXING THICKENING

Wet your flour with warm water instead of cold when mixing thickening for gravies, pastes, etc., and you will find the lumps will disappear like magic.

PLUM PUDDING

One cupful of sugar, one cupful of chopped suet, one cupful of molasses, one cupful of milk, three cupfuls of flour, one teaspoonful of soda, cinnamon, cloves and nutmeg, a little salt, one heaping cupful each of raisins and currants, and one-half cupful of chopped citron. Steam three hours. Serve with a sauce made as follows: One cupful of sugar, one egg, butter the size of large egg, beaten together to a cream.

ESCALLOPED SQUASH

Cut a Hubbard squash into pieces, and bake. When done, scoop out pulp, season with salt, pepper and butter, place in a baking-dish. Add a little milk into which an egg has been beaten, cover with cracker-crumbs and grated cheese, and bake until brown.

MAPLE FUDGE

Two cupfuls maple syrup, two cupfuls sugar, piece of butter size of small egg. Boil until it forms a soft ball in cold water. Stir until creamy. This is improved by boiling hard enough to make it necessary to add a tablespoonful of rich cream while stirring.



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